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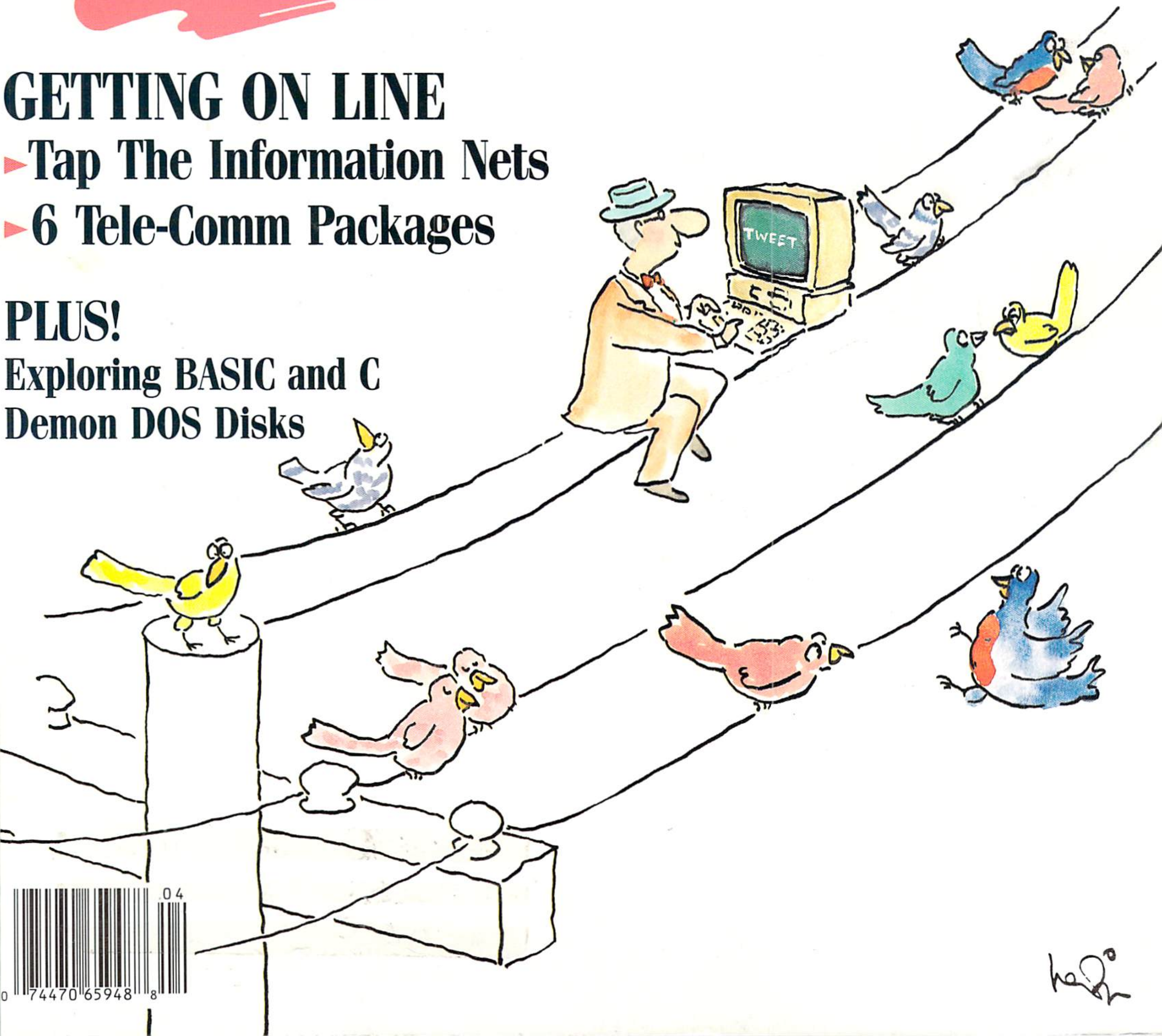
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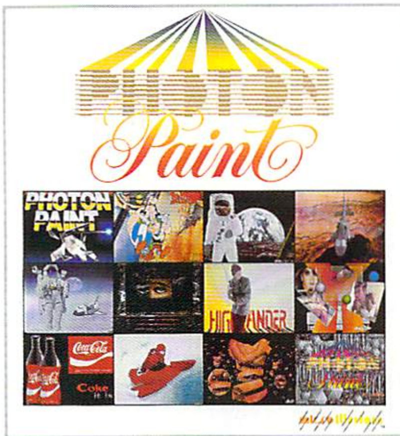
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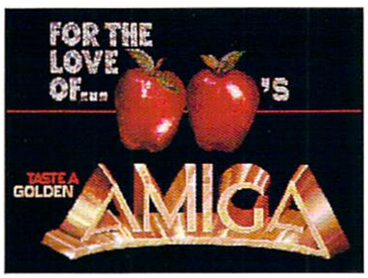
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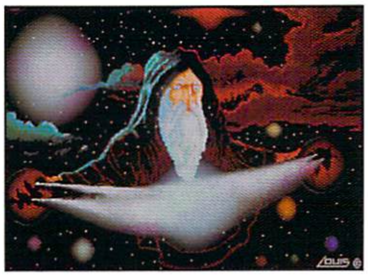


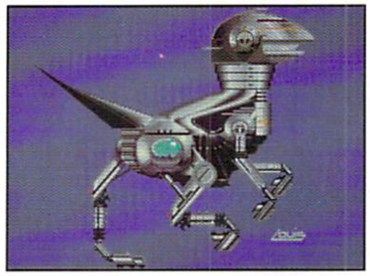
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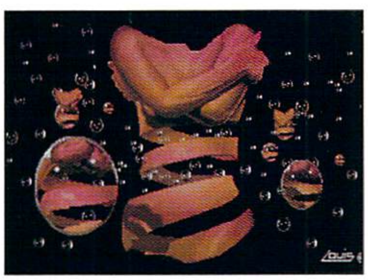
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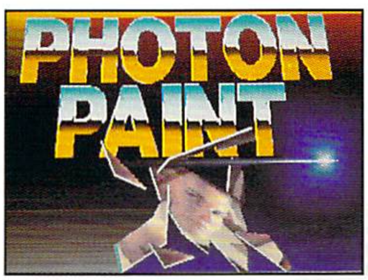


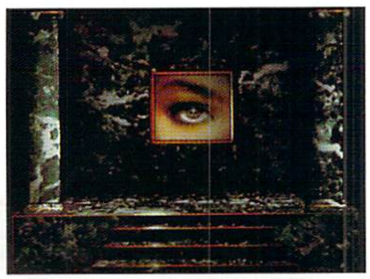






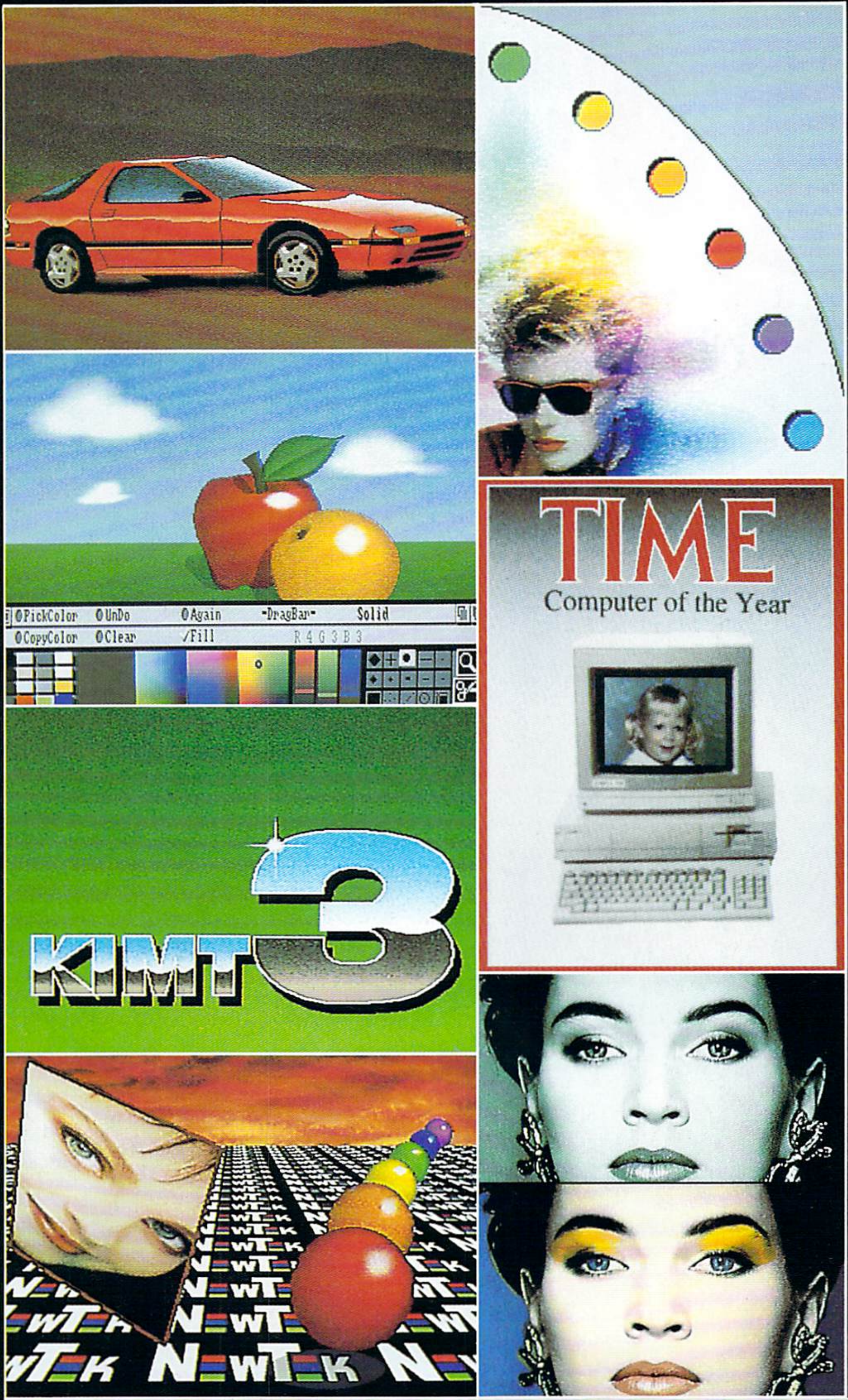






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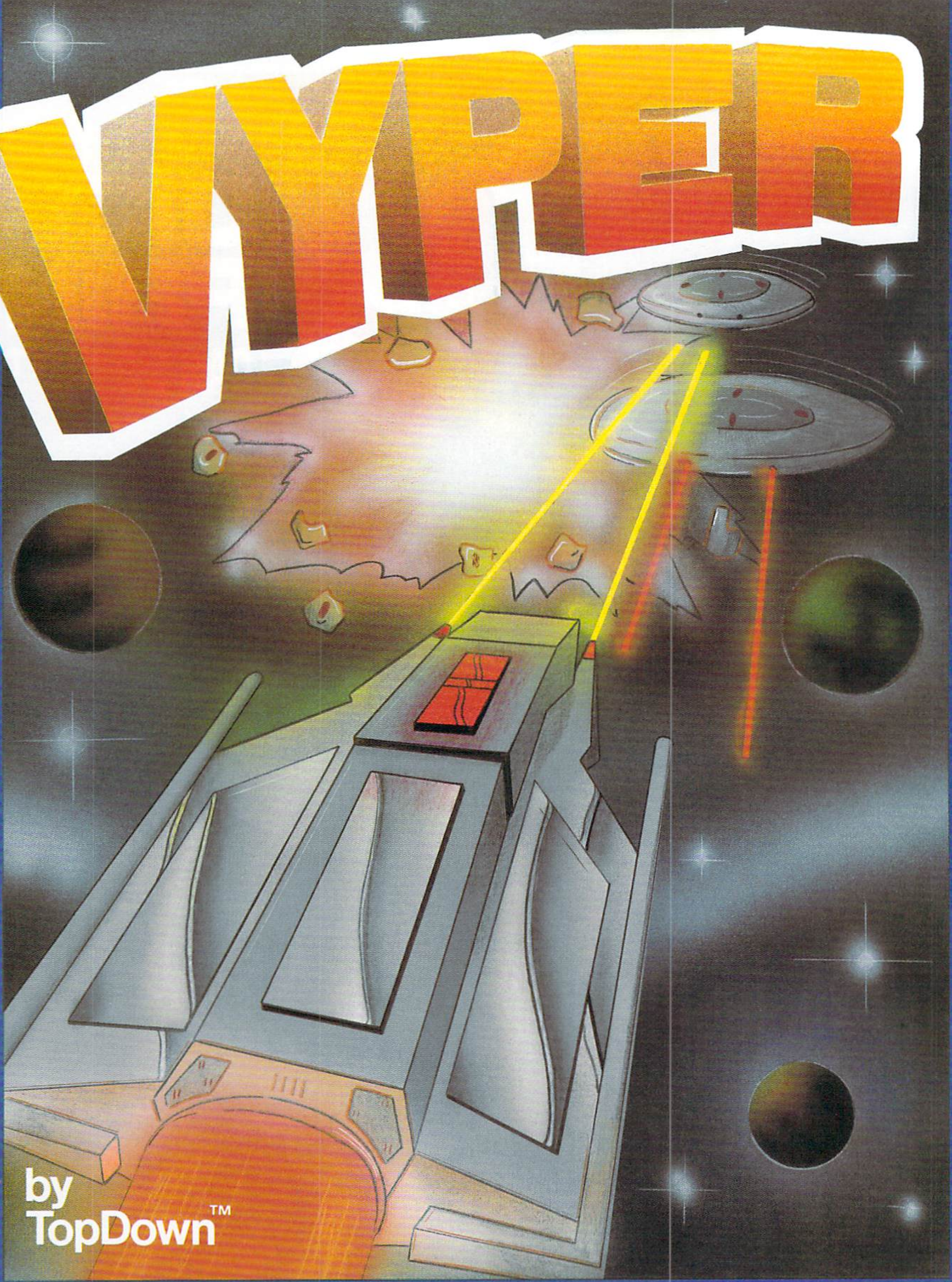
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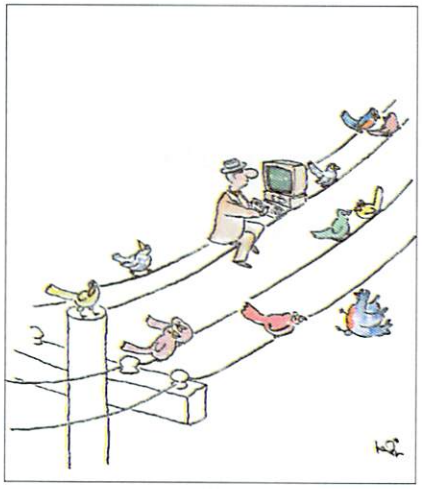
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VOLUME 4, NUMBER 4 APRIL 1988

CONTENTS



Although we have been able to "telecommunicate" (i.e., use telephones) for over 100 years, the very recent advent of personal computers has produced radical changes in the way telecommunications affect our lives. You can now talk not just to another individual but to all of Wall Street, access entire encyclopedias, "telecommute" to the workplace, carry on simultaneous "conversations" with dozens of people, go shopping 3000 miles away. . . This month we show Amiga users how to get "on line" to this amazing world of information-on-demand.

COVER ILLUSTRATION BY ARNIE LEVIN

FEATURES

ARTICLES

COLUMNS

DEPARTMENTS

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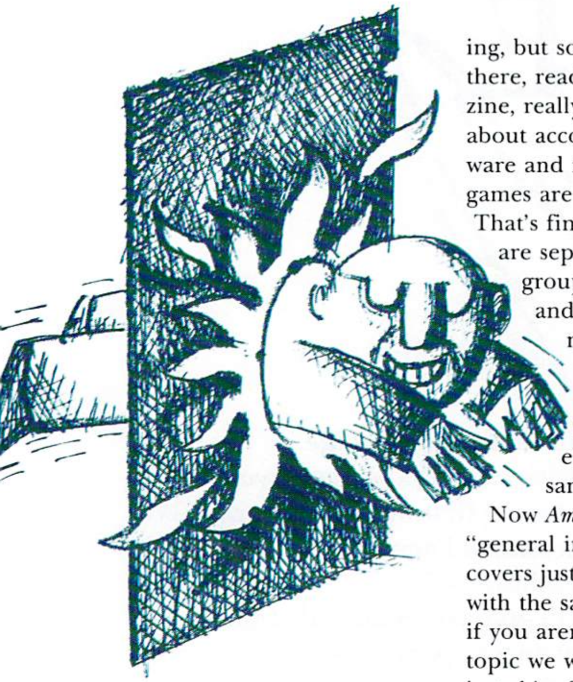
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Circle 150 on Reader Service card.

ZEITGEIST

In which our wayward hero flaps way out on a fragile limb and begins gnawing at his perch.



PART 1. TRUNK SCALING

In the computer magazine business, it is taken for granted that the people behind the words not only know whereof they speak but that they enjoy everything about the computer they cover. Keyboard layouts, pin voltages, graphics, spreadsheets, games, printers, user groups, hard disks, CAD packages and PD software. All of it is fascinating and worthwhile. We aren't supposed to favor one area over another or admit that some things about computers are boring, irksome, or just plain stupid. Computers are wonderful and everything about them is wonderful.

Now you might think that accounting packages are boring, but someone else out there, reading this same magazine, really gets charged up about accounts receivable software and might think arcade games are a waste of time. That's fine. That is why there are separate special interest groups on CompuServe and separate user group meetings for different interests and even separate magazines that focus on different elements of the same computer.

Now *AmigaWorld*, being a "general interest" magazine, covers just about everything with the same enthusiasm, and if you aren't interested in a topic we write about, then you just skip that article. If you are interested in that topic, you want the author to be just as excited as you are.

PART 2. BARK WALKING

Telecommunications, connections, getting on line. That's our focus in this month's issue of *AmigaWorld*.

Telecommunications is a wonderful thing. It is the future. It brings people together. It is an entire world of free software, BBSs, SIGs (Special Interest Groups), on-line conferences, articles, news, shopping, airline schedules, research, stocks, chats, etc. There are religous BBSs, pirate BBSs, pornographic BBSs, Amiga BBSs, hospital BBSs, military BBSs. . .somewhere out there someone is probably the SYSOP of a psychic phenomena BBS. You can shop or talk or talk shop. You can browse through services for hours without communicating with another human, or join in a fast and furious multilevel debate on a thousand subjects with dozens of people at the same time, each in a different part of the country.

No doubt about it. Telecommunications is one of the great justifications for owning a computer.

PART 3. BALANCING ACT

Now, I know about telecommunications. Not enough to write my own BBS software, but enough to be dangerous. I own more than one modem and a handful of terminal packages. I have downloaded my share of PD software and sent enough E-mail so that I'm not completely lost on line. I have accounts with the major services, I've participated in teleconferences, I've set up BBSs and been a SYSOP. . .I've even done a bit of hacking. My first brush with telecommunications was about sixteen years ago logging onto the Dartmouth College time-sharing mainframe. While I usually leave the day-to-day information gathering to Lou Wallace (Help Key), Bob Ryan (*AmigaWorld*'s resident techie) and people like Peggy Herrington (contributing snoop), I still get on line every now and then (anonymously) to see what's going on, how things have grown, how they have improved. I know about the wonderful things out there and I know how to access it all without too much trouble.

PART 4. CHIRPING AND CHEWING

In the early days (I sound like someone's grandfather, don't I?), telecommunications was no day at the beach. It was confusing and chaotic. Systems were complicated and failed quite often. It seemed like there was more down time than on line, and small, independently run BBSs were flaky at best. But that was back in the dark ages of computing. Before mice and pull-down menus and error checking and protocols. Things have gotten so much better in the past sixteen years, right?

PART 5. FRANTIC FLAPPING

OK, enough avoidance. I think it is time that someone admits it publicly. I don't like telecommunications. Yes, I know how wonderful it is and how "easy" it is and all that, but I just don't like it. Any of it.

It starts with RS-232, the non-standard standard. I have yet to see an RS-232 printer work properly on the first try. It usually takes a few hours of fiddling with DIP switches (assuming that by some miracle you have the proper cable in the first place) before you can get more than gibberish. Per- ►


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Can THREE Stooges Save ONE orphanage From FOREclosure?!
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They can save the day by making ASSETS of themselves!
THE EVIL BANKER
He took their NEST EGG and told them to BEAT IT!
THE WIDOW AND HER 3 BEAUTIFUL DAUGHTERS
They're about to be thrown out on their ARREARS!
"NYUK, NYUK."
"OH, A WISE GUY!"
"RUFF! RUFF!"
Producers ROBERT & PHYLLIS JACOB
MASTER DESIGNER SOFTWARE
THE THREE STOOGES
MOE
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Actual Amiga Screens

haps that is the root of it all—RS-232.

I don't like modems. I suspect that they are an invention of the phone company. People with computers weren't making enough phone calls, so the phone company decided to create an insidious device that would let people compute while they were running up their phone bills at the same time. And now that more and more people are getting on line and modems are supporting higher and higher baud rates, the phone-line quality in the U.S. has steadily declined. You can get a better connection calling overseas than across town. Shouting into the phone is one thing, scrambled data is another. Lousy connections are just part of telecommunications these days.

I don't like baud rates, parity, stop-bits, handshaking, user numbers, passwords, TTYs, protocols, capture buffers, E-mail, uploading, downloading, ARCing and UNARCing, auto-dialing, auto-answering, scripts, macros, pulses, tones, local nodes, Xon, Xoff, Kermit, Xmodem, Ymodem, Zmodem, CTS, CTR, duplex, echo, CR with LF, CR without LF, VT-100, word length, or any of it. I understand it, I just don't like it.

Getting into telecommunications is a good way to triple your phone bill overnight. You spend over $100 on a modem, up to $100 for a terminal package, money for wires and phone jacks (no home computer in history was ever set up within easy reach of a phone jack), $30 or $40 to sign up with a big service that charges $5–$10 an hour (in the middle of the night, that is), sometimes extra to download programs or access special databases. Add a few dozen hours on top of your usual phone bill and you're ready to get started. I would hate to see statistics on the number of teens (and adults, for that matter) who were grounded after they spent a few nights board hopping, and the phone bill comes in higher than the mortgage payment.

But maybe the bill won't be too terrible if you can find a local node nearby that you can get on without dialing over and over and over again. There is a well known but never verbalized axiom about getting on line. The best boards are always out of state (no matter where you live) and the line is always busy (no matter when you call). Of course, you can have your software keep re-dialing for you. Just spend a week or two with the manual, write your own little macro-script file using ED or some other user-hostile text editor. Set up your baud rate, word length, stop bits, parity, duplex and protocol for the particular service that you wish to log on and you're ready.

"What are these cryptic terms? What values are you supposed to use?" the novice might ask. Reasonable questions, certainly. But according to manufacturers of telecommunications software, the answers are all so painfully obvious to everybody that they are never explained in any manual. I guess people are supposed to learn it all by osmosis or genetic memory.

But let's assume you fought your software to a draw, don't mind extra decimal places on your phone bill, like to make calls at three in the morning and are ready to go. First you play the telecommunications version of radio giveaway. "If you are caller number four hundred ninety-seven, you have won yourself . . ." It isn't really quite that bad. Sooner or later you will Get On Line.

Now you can meander about cryptic menus for an hour or two until you find something worth downloading. However, you can't just download it because it won't run on an Amiga if it has trailing zeros. The zeros have to be filtered or chopped. You can get public-domain choppers and filters for free on line . . . somewhere . . . if you can find them. But wait. It's an ARCed file. No problems with chopping, ARC does that automatically. All you need is a copy of ARC or UNARC to download things. Fine. How do you get a copy of ARC or UNARC? Download it, of course!

As computers became more sophisticated, telecommunications just became more complicated. Sometimes getting on line seems like a cross between a 24-hour automatic-banking machine and Zork.

I'm sorry. I'm sure there are thousands of people out there who love telecommunications. Who have built extensive software collections. Who write script files in a few minutes. Who have no trouble getting on line, finding what they want, download and upload files all the time, send messages, chat with SYSOPs, shop, check stocks and do all of those wonderful things. But how many hours of frustration went into learning the ropes? How high were the bills? How much money did you spend before downloading that first feeble game of computer Blackjack? Add up all the money you spent and divide it by the number of usable programs you downloaded. How much did that "free" software cost you?

Part 6. Thirty-Two Feet Per Second Per Second

Why hasn't it gotten any easier for the novice? Why is it so confusing? There used to be two choices for error checking, now there are dozens. There was one baud rate, now there are dozens. There were one or two services, now there are dozens. There were one or two private BBSs, now there are hundreds.

Some day you will be able to buy a modem, plug it in and turn on the computer. An icon for telecommunications will appear. Clicking on it will activate the modem, it will dial a BBS number service and return with the most current list of BBS numbers and services. All the protocols, bauds, parities and other stuff will be set automatically when you pick the service with a click. Your computer will talk to their computer and then tell you how much it is going to cost. If you agree to the charges you'll be on line. Nice neat menus (or icons and windows for each area?). Find something you want to download, click "Would you like a copy of this program? Yes/No" and it will all be done for you.

You shouldn't have to know how to rebuild a carburetor to drive to the supermarket, and you shouldn't have to know about protocols, emulations, passwords, stop bits, file filters, macros, etc. to get on line.

I'll keep poking through the services and trying new software, but I won't enjoy it. Thousands of people enjoy fighting in the wire wars. It's like colonizing a new planet, but I think there are thousands more who don't want to hop on the next arc until most of the man-eating vegetables at the other end have been domesticated. The concept is great, the results are great, but the process is obtuse, complicated and frustrating.

If you feel the same way I do, then drop me a postcard. If you disagree with all this, send me some E-mail.

Guy Wright

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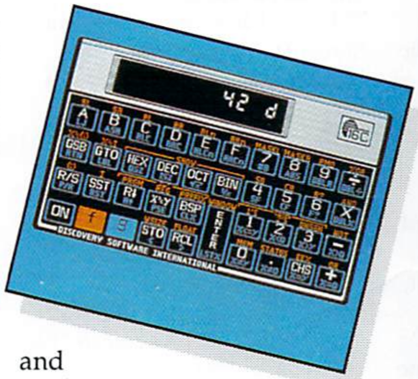
AMNIX provides keyboard macros, command line history, inline editing, information about Exec, UNIX style batch files, enviroment variables, and much more. Even without our excellent documentation it's easier to use than the CLI. A must have for Amiga "power users", **AMNIX** is engineered to save you time and memory.

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REPARTEE

Comments, complaints and concerns from

AmigaWorld *readers.*

Keeping Up With The Joneses

COMPUTER OWNERS ARE beginning to exhibit the same pitiful thinking that has given us shoddy, disposable cars. Recent letters from unhappy Amiga 1000 owners read to me like the jealousies associated with "keeping up with the Joneses." My Amiga 1000 not only does all that I need it to do, but a great deal more. My recently published book on Chinese film was written on the Amiga using Scribble!, and I am writing another. It does not upset me that the 2000 or the 500 have other, presumably more advanced features. To upgrade to the 2000 for me would be somewhat like trashing my perfectly serviceable '59 Ford Custom 300 just because I can now own a car that will tell me, in a nasal twang, that my seatbelt is unfastened.

George S. Semsel

Losing Faith

I RECENTLY TRADED in my Amiga 1000 for a 2000. While I anticipated the joys of the new features, I have yet to be able to use them. My machine has spent most of the first month of ownership undergoing "warranty repairs."

The first problem was that the machine ignored the first keystrokes made at each prompt. Commodore advised my dealer to correct the problem by "clipping a couple of capacitors." What happens if six months from now I buy an expansion unit that needs those capacitors? Second, when my dealer tried to install a memory upgrade, they found that my 2000's expansion bus was not functional and needs repairs.

Third, I have found that the ScreenDump feature on the included Workbench does not function.

I am greatly concerned that this low level of quality control will quickly earn Commodore's "business" machine the reputation of an unreliable, souped-up toy.

G.L. Isdell
Annandale, VA

Tell Me Why

I AGREE WITH the "proud owner" [Dec. '87, p. 8] about the capabilities of the Amiga 500. Overall, the A500 is a worthy machine with great features that no other PC has to offer. And the price is right. But, when I received mine last Christmas, I was very displeased with the power supply and the short cable to the 1010 disk drive. Commodore must have been asleep at the helm when they designed these items.

First of all, the power supply could have been made more professional. Why are the two cords running out of opposite ends of the unit? Why is the on/off switch in back of the unit instead of in front, where it would be more convenient?

As for the external disk drive, why does it have such a short cable? Why is the disk drive light red instead of green?

Now I'm searching for a better designed power supply. I can live with the disk drive.

David T. Hawkins
Garland, TX

Can Do

I APPRECIATE Lou Wallace's and Bob Ryan's honesty about what the Bridgeboard and 68020 CPU Board can and *can't* do. [See *AmigaWorld*, Feb. '88.] The "can't" is especially helpful, so that when I go to buy these products, I'll have an accurate picture of their strengths and weaknesses.

Your departments are also very interesting and useful, especially Notepad. I look to magazines such as yours to provide me with information that is not available through any other channel. Notepad, Hors d'oeuvres and What's New? do an excellent job of providing me with that information.

Kevin C. Rohrer
Wadsworth, OH

Out in the Cold

I AM TRYING to purchase a new Amiga 2000, but there is no Amiga dealer in my isolated little town in northern Canada. I called every dealer advertising the A2000 in your magazine, using their 800 numbers. Not one has opened access to their toll-free lines to calls coming from Canada.

I fully realize that you have no control over your advertisers in this respect; however, would you consider reminding them that you don't fall off the world when you step north of the 49th parallel?

Those advertisers may find it interesting that, had I gotten through on one 800 number, I most likely would have purchased my system from *that* company.

Graham J. Kerr
Fort Smith, NWT, Canada

I HAVE A suggestion for the advertisers of Amiga products: When a reader circles a product's corresponding number on the reader service card to get more information, please send them the information instead of leaving them out in the cold. If you don't have any information to send them, then don't instruct them to circle a number. I would rather know up front if there is any information available, rather than wait several weeks for information that never comes.

Jennifer M. Markley
Carrollton, TX

Send your letters to: Repartee, *AmigaWorld* editorial, 80 Elm St., Peterborough, NH 03458. Letters may be edited for space and clarity. ■

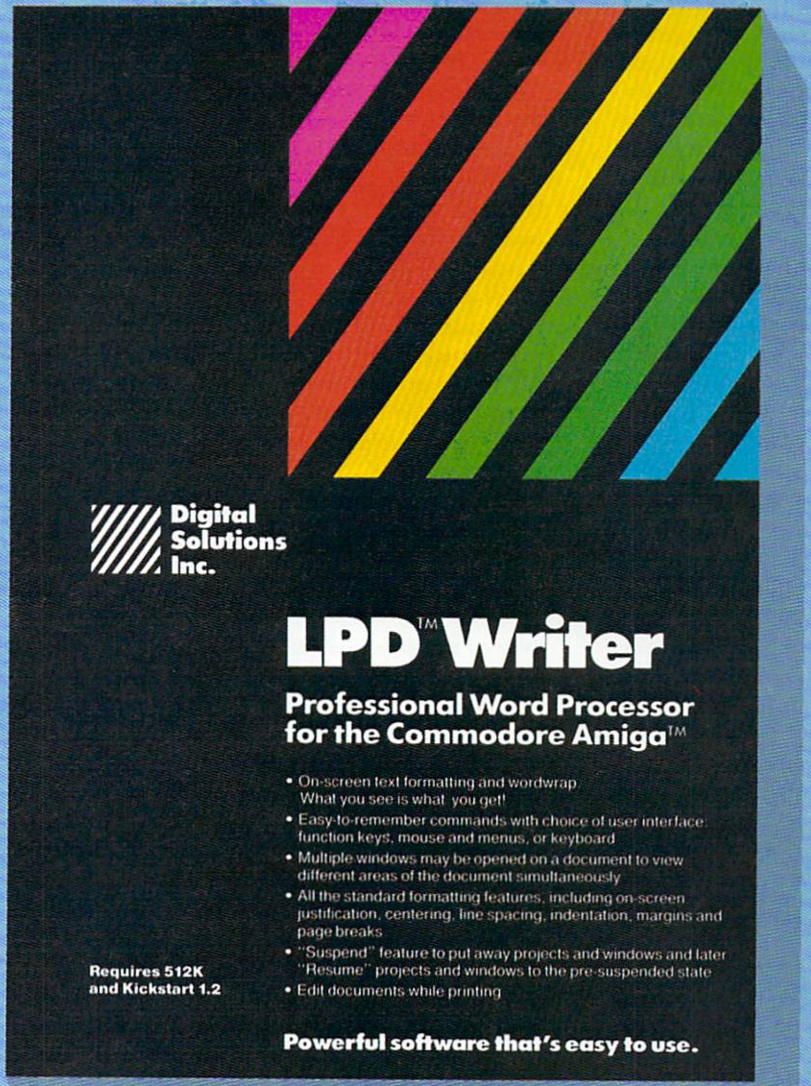
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NOTEPAD

Edited by Linda Barrett

LA Amiga

HELD IN mid-January, AmiEXPO Los Angeles gave west coast Amiga owners a chance to see the latest and greatest. The most striking product on the floor was NewTek's **Video Toaster**. For those on a tighter budget, Hash Enterprises showed **Video Stand**, a low-cost graphics effects generator.

Videophiles were congregating at the Sony AmiEXPO Theatre, where Amiga videos aired on Sony equipment. AmiEXPO plans to have a similar theater at the Chicago show (July 22-24), so interested Amiga artists should send their slides and videotapes to: AmiEXPO, 211 East 43rd St., Suite 301, New York, NY 10017 or call 800/32-AMIGA (in NY, 212/867-4663).

Gold Disk's **Professional Page**, the Amiga's first high-end desktop publishing program, won't be lonely for long. Soft Logik announced their professional system, **Publishing Partner**. Infinity's **Shakespeare**, a color desktop publishing system, is also on its way to dealers' shelves.

In hardware, CSA showed their **68030/68882 board**, semi-officially named the "Over 30" board (jokingly called the "baby Cray"). The Over 30 board should run about four times faster than their 68020/68881 combination. Preliminary tests indicate performance near 8 Mips (Unix Mips). Other interesting hardware included a **Bernoulli Drive and interface** from Inner Connection.

Micro-Systems Software and Brown-Wagh announced **Excellence!**, a professional-quality word processor that has it all: spelling checker, thesaurus, grammar checker, colors, IFF graphics, math, footnotes, headers, index and table of contents generation, PostScript and more. Watch out, WordPerfect.

Another "whisper in the ear" product we discovered is Panasonic's **WORM (Write Once Read Many) drive**, scheduled for March release. Access speeds are about 2.5 MB/sec. What's the big deal? Each flippable laser disk will store 400MB.

To our chagrin, we discovered **AMIC Term**, which could set a new standard in Amiga telecommunications software. AMIC Term has just about everything (in a few different ways) you'd want in a telecommunication package. Unfortunately, our discovery was too late to include in our telecommunications software roundup. Watch for future reviews and What's New? announcements.

—RR & GW

Who Was That Bearded Man?

CONTRARY TO THE caption in the February '88 issue, the master of 3-D on page 11 is not Allen Hastings, but fellow Aegis 3-D magician Stuart Ferguson, author of Modeller 3-D.

The Great Software Hunt

EVEN IN HIS wildest hallucinations, Hunter Thompson could not have imagined what waited at the Consumer Electronics Show. If the walking ergonomically-designed joystick that welcomed us to the Las Vegas Convention Center wasn't enough to drive the gonzo journalist straight, seeing the Three Stooges' Curly promoting computer games would be. The roving joystick was really just a model dressed as WICO's ERGOSTICK, but she personified the show's predominant theme—entertainment.

The wise guy at the Cinemaware booth was a Curly look-alike, but their THREE STOOGES game was quite real and full of befittingly buffoonish escapades. The second half of Cinemaware's double-feature was ROCKET RANGER, a Flash Gordon-inspired, movie-like, interactive adventure with sound effects.

Elsewhere on the floor the action was equally frenzied. Accolade previewed 4TH AND INCHES (a hard-hitting pro football game), PINBALL WIZARD (pinball games that eat players, not quarters) and BUBBLE GHOST (where you guide a bubble-blowing ghost through a hazard-filled maze). MicroIllusions displayed GALACTIC INVASION (another of the One-to-One series) and EBONSTAR (a seek-and-destroy space adventure). For those who wanted to create their own planets, MicroIllusions' resident Walt Disney demonstated Photon Paint (a full-featured HAM paint program) and Cell Animator, the first module of their integrated video animation system.

Mindscape introduced two new games: IMPACT (similar to Breakout and Arkanoid), where players attempt to destroy barriers with a bouncing ball while dodging stun bombs and lightning icons, and HARRIER COMBAT SIMULATOR, in which you must destroy enemy air and ground forces from the cockpit of a Harrier jump jet.

Electronic Arts exhibited two new entertainment creations. INTERCEPTOR is a combat flight simulation that lets you choose between two different fighter planes (the F-18 Hornet and the F-16 Falcon) and six combat missions

that take place in the San Francisco Bay area (you can even swoop under the Golden Gate Bridge!). THE BARD'S TALE II: THE DESTINY KNIGHT gives Bard's Tale fanatics six cities, 25 dungeon levels, new spells to acquire and new monsters to worry about. EA is also continuing its support of the Amiga video market with DELUXEPRODUCTIONS, a 16-color, hi-res graphics animation program for video professionals. DataSoft, an EA affiliated label, has been busy with THE HUNT FOR RED OCTOBER, a submarine combat simulation based upon the novel; ALTERNATE REALITY: THE CITY, a fantasy/adventure game; and BATTLEDROIDZ, an action/strategy game.

Strategic Simulations presented QUESTRON II, a sequel to the fantasy-adventure game Questron. The author of Three-Sixty's Harpoon demonstrated his military-war simulation game that should be released this fall, while MicroProse took to the air with an Amiga version of GUNSHIP, their popular helicopter simulation.

A number of software publishers new to the Amiga community unveiled some tantalizing surprises. OmniTrend exhibited PALADIN, an animated fantasy combat sport. Konami Software arrived with a bang—actually, five bangs: CONTRA, JACKAL, RUSH 'N ATTACK, BOOT CAMP and GRADIUS. Each game provides the opportunity to become a hero—if you can survive!

—BG & SL

Amigas Are a Diamond's Best Friend

COLOR STREAMS FROM every corner of Pete Flusser's office as light pierces amethysts, rubies, citrines, diamonds and an Amiga 2000's monitor. Under the practiced eye of Flusser (a founding member of the American Gem Trade Association whose firm, Overland Gems, cuts as many as 20,000 stones a month), the Amiga has been placed in a new setting—the jewelry business.

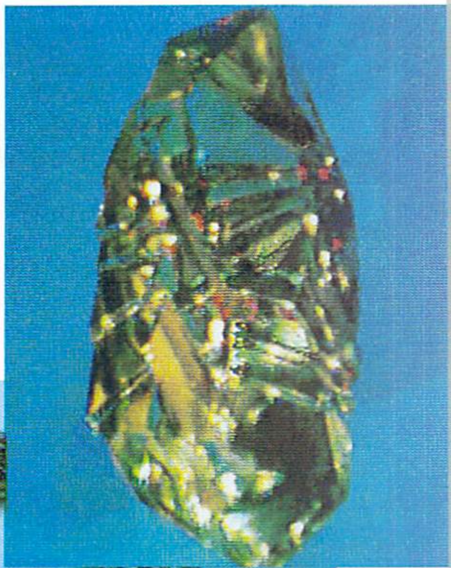
One of the biggest headaches for wholesale jewelry traders is mailing heavily insured stones to prospective buyers. With a fast dose of the Digi-View digitizer (NewTek) and a modem, Flusser has cured this expensive inefficiency. "The Amiga can send a picture over the modem or by disk for the customer to look at; then if they like the stone, you've got a serious customer, instead of sending a stone out blind," he explained. "Digitizing is far cheaper than sending a photograph, and you know immediately if an image looks right. You don't have to wait to get a picture back from the lab."

In some cases, Flusser achieves more accurate results with digitized pictures than photographs. For example, film can not capture the green chromium hue, so a bright green stone might look like an olive in a photograph. Flusser added, "If you see a fine picture of an emerald, it has been retouched. Using the various paint programs, you can come much closer to matching the color without sending the work out to a lab."

The Amiga's ability to match gems' brilliant hues promises an inexpensive way to color-grade stones. "We'd like to work out a program like DigiPaint (NewTek) with a larger on-screen HAM palette and a white square next to it," described Flusser. "You would hold your stone up to the white square to match the color and then record the RGB readings. From here in Los Angeles, I could call a jeweler in New York who also has an Amiga and describe a ruby or emerald by giving its color as an RGB value. If we go one step further and have templates to call up in the shape of the stone with proper shading, we could duplicate almost exactly how the stone looks."

Flusser is not limiting the colorful Amiga to merely charming long distance buyers. As a promotional tool, the computer can sit in a jewelry store's window playing an endless loop of beautiful digitized gems to attract customers. Flusser plans to supply a complete software package including a monthly service of disks for in-store displays and an Amiga adaptation of the IBM's BOS jewelry accounting and inventory program. Interested jewelers should contact: Pete Flusser, Overland Gems, 550 South Hill St., Suite 1555, Los Angeles, CA 90013.

—Ben and Jean Means





Stones by phone, a digitized citrine glyptic (top) and a square-cut rainbow of amethyst, various-colored garnets, citrine and tourmaline.

HORS D'OEUVRES

Hints, tips and techniques

from your fellow Amiga users.

Arc Tips

HERE ARE HINTS for using Arc to un-Arc programs acquired via your modem.

First, place Arc in the "C" directory of your system disk; this allows Arc to be used as a regular AmigaDOS command.

Second, you can direct the results of a de-Arc to a directory other than the directory your Arced program is in by logging into the desired directory with CD. Then type your Arc command including the path to the source Arced program. For example, let's say that on df1: we have a directory called dee, and dee contains several Arced programs including the file foo.arc. You want the contents of foo.arc to go to df0:. You type

```
CD df0:
Arc x df1:dee/foo
```

This will cause Arc to extract the files in foo.arc and put them in the current directory.

Charles Jagow
Chesapeake, VA

Simulated Double Buffering

IF YOU ARE looking for a very simple method to double buffer your C-language animation programs, but you can't quite figure out what is written in the Amiga ROM Kernel Manual, then give this a try.

Under Intuition, create two screens and windows with the OpenScreen (&myscreen) and OpenWindow (&mywindow) commands. You could call the screen s1 and s2. If you opened s1 first, it will be hidden behind s2. Draw into the hidden screen (s1) and then use the command ScreenToFront(s1) to display it in front of s2. Now that s2 is hidden, draw an updated version of your animation into it and then use ScreenToFront(s2) to bring it to the front. Continue doing this "screen shuffling/updating" until your animation is finished.

I've used this method with BOBs and found it to be just as nice as the more complex ROM Kernel procedures. The animation is fast, and best of all, flicker-free.

David Alves
San Jose, CA

Inexpensive Disk Boxes

AFTER SHOPPING AROUND for a way to hold a lot of disks, I was upset to see cases with 50-disk storage capacities costing $15 to $40 (as if the 3.5″ disks aren't expensive enough!). Then a friend showed me a way to save on the disk cases. . .recipe files! By checking office supply shops, I found file boxes (e.g.: Sterling Plastics, 5″ × 8″, model #530) that are deep enough to hold over 50 3.5″ disks. The disks are stacked sideways, there is room on top for reference cards and dongles, the lids simply snap shut, the units stack well, are often available in different colors, made of very sturdy plastic, and they cost about $2.75! All you have to do is keep your eyes open (even supermarkets sometimes carry them) and make sure the disks will fit before buying.

Darryl Davidson
Pocatello, ID

Basic Sleep

AS A VETERAN of large mainframes but a relative newcomer to the Amiga, I would like to point out one or two things about multitasking that should save BASIC programmers from some problems in the future. I have seen in recent months many papers and books that tell programmers to "WAIT" for menu and mouse input by using statements like

```
10 IF MOUSE(0) = 0 THEN 10
```

This gives you the illusion that the task (in this case the BASIC program) is waiting for the mouse to be clicked. Some books that I have studied even say that it is waiting. It isn't. The CPU is in what is known as a spin loop and the task is eating up CPU cycles as fast as possible.

In a multitasking environment, the CPU must be shared by all tasks that are ready to use it. Tasks that are spinning are always ready to use it. The system therefore divides the CPU between the tasks on a time-share basis. This has the same effect as each task running on a slower CPU.

A word of advice: If you don't need the CPU, don't ask for it. Wait for mouse and menu input by using something like

```
10 IF MOUSE(0) = 0 THEN SLEEP
```

This should speed the execution of other programs running at the same time, and it is a good habit to get into for the future.

David Walton
Vedbaek, Denmark

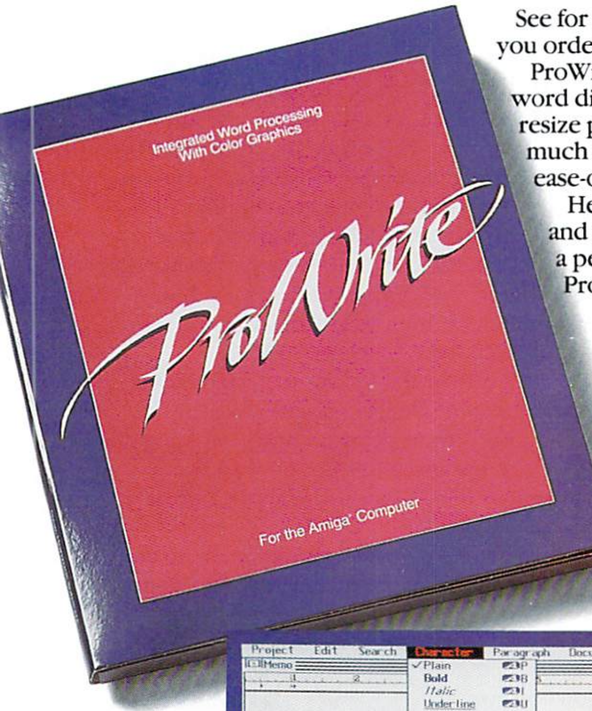
Copy Alternatives

IF YOU ARE tired of using the regular diskcopy program on your Workbench disk, here is a trick that will help you out. First go to the system directory on your copy of the Workbench disk and delete diskcopy. Now take your favorite copy program and rename it diskcopy (I like to use the PD program Quickcopy). Now put your new diskcopy back in your ►

It's Time To See How Your Word Processor Stacks Up To ProWrite™ 2.0

Feature	ProWrite	Scribble	TextCraft	VizaWrite	KindWords	LPD Writer
SPELLING CHECKER	✓	✓			✓	✓
MAILMERGE	✓	✓		✓	✓	✓
OPEN MULTIPLE DOCUMENTS	✓	✓		✓		✓
TRUE MULTIPLE FONTS	✓			✓		
INCLUDE COLOR GRAPHICS	✓				✓	
PLACE GRAPHICS ANYWHERE ON THE PAGE	✓					
USE COLOR FONTS	✓					
WYSIWYG DISPLAY	✓		✓	✓	✓	✓
USER-SETABLE PREFERENCES	✓					
LEFT, RIGHT AND DECIMAL TABS	✓			✓		
PARAGRAPH SORTING	✓					
CHARACTER, WORD, LINE, AND PARAGRAPH COUNTS	✓					
FAST GRAPHICS PRINTING	✓			✓		
USE ANY PREFERENCES PRINTER	✓	✓	✓			✓
AUTOMATICALLY CONFIGURES TO PRINTER	✓					

Now You Can Trade Up To ProWrite And Save $50



See for yourself—trade in your current word processing software, and get $50 off when you order ProWrite, the only multi-font color graphics word processor for the Amiga®!

ProWrite 2.0 has a number of powerful new features. A spelling checker with a 95,000-word dictionary. Mail merge. The ability to read hold-and-modify (HAM) pictures, and to resize pictures as well. In addition, ProWrite has the Workbench 1.3 printer drivers, for much faster and higher quality graphics printing. All this, plus ProWrite's flexibility and ease-of-use combine to make ProWrite the best word processor for the Amiga.

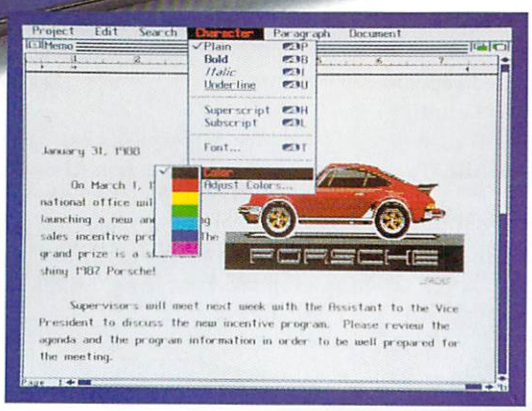
Here's the offer: just send us the master disk of the word processor you're using now, and get ProWrite, version 2.0, for only $75! That's a savings of 40%—which makes this a perfect time to reconsider your word processor. Because now, when you compare ProWrite and the competition, it really pays!

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Circle 38 on Reader Service card.



AW

I'M READY TO MOVE UP TO PROWRITE 2.0!

Here's my word processor master disk and a check or money order for $75 payable to New Horizons Software, Inc. Send me the new ProWrite 2.0! (Texas residents please add $6 sales tax).

NAME __________

ADDRESS __________

CITY _____ STATE _____ ZIP _____

system directory. You can now slide your disk icons on top of one another and your copy program will load. Just remember to put your Workbench disk back in DF0: before exiting your copy program.

Ken Hodel
South San Francisco, CA

Editor's note: Be sure that you are doing this with a COPY of your Workbench disk—NOT your original. Also note that in order for this tip to work you must be able to make a copy of your copy program in the first place. Many copy programs won't copy themselves.

ADDBUFFERS TO DOWNLOADS

MOST MODEM USERS probably know by now that the quickest way to download files is to direct them to the RAM: device. I'm also sure that most users who use this method have been burned at one time or another by "Volume RAM: is full" or by not having a CLI available to copy the file to disk. AmigaDOS version 1.2 users have a better way available to them. The command is:

```
ADDBUFFERS df<x>: 25
```

where x is the drive where the files will be downloaded. This command can be executed from either the CLI or in the startup-sequence.

I have found this method to be only slightly slower than downloading to RAM: and much safer. Unfortunately, nothing is free. Each buffer added takes approximately 500 bytes of memory or 12.5K for 25 buffers.

Charles K. Edwards
Manassas, VA

POLLY TUTOR

I WROTE A very simple program in Amiga Basic that says the name of our bird, pauses for a few seconds, then says "pretty bird," pauses for five to eight seconds and starts the whole process over again and again.

I set the bird on his perch next to the Amiga and start the program. I turn off the monitor (I have the sound playing through my stereo, but you could just turn down the brightness to save the picture tube), turn off the lights and let the bird listen to this all night long. The program looks like this:

```
10 A$ = TRANSLATE$("bird's
   name,,pretty bird!")
20 SAY A$
30 FOR I = 1 to 4550 : NEXT I
40 GOTO 20
```

He hasn't learned to speak yet, but he seems to like it anyway.

Tim Salt
Bountiful, UT

AMIGATERM REDIAL

IF YOU ARE an AmigaTerm user, then I am positive that you are well aware of the frustration involved in manually redialing a telephone number via typing "A/" in command mode or hitting a user-defined Meta-key (function key).

Fortunately, I have stumbled upon a less aggravating solution not discussed in the AmigaTerm User's Manual (I received AmigaTerm when I purchased the Amiga 1200 RS modem). Select the full range of result codes by typing "AT X2" in command mode. Now when you issue any of the available commands to dial a telephone number (ATDT, A/ or a Meta-Key), AmigaTerm will attempt to place the call up to ten times, automatically! This can be a great key saver for those hard to reach BBSs.

Also, this option will work regardless of your Verbal (AT Vn) and/or Monitor Speaker (AT Mn) settings.

Michael Chiofolo
Trenton, NJ

BATCH COMPILE, ASSEMBLE AND LINK

WHEN I STARTED programming on the Amiga I realized that I would need a good set of batch (execute) files to accomplish the three necessary steps: compiling, assembling and linking. After looking through all the AmigaDOS commands and giving it a bit of thought, I came up with the following set of files.

The first, MAKEIT, is similar to a subroutine in a program. It is called repeatedly from the second, MAKEALL, until all the files are compiled:

```
;this file should be named MAKEIT
.key file
echo "-- compiling <file>.c . . ."
if exists <file>.o
  delete <file>.o
endif
cc -o <file>.o <file>.c
if not exists <file>.o
  quit 20
endif
```

The second file, MAKEALL, should contain the names of all the files that need to be compiled, calling MAKEIT for all of them. Then MAKEALL will do the linking and error-checking, as follows:

```
;this is MAKEALL
failat 20
echo "starting compilation"
execute makeit file1
execute makeit file2
execute makeit file3
execute makeit file4
execute makeit file5

ln file1.o file2.o file3.o file4.o file5.o
  -lc -o main.exe
if exists main.exe
  echo "successful link"
  skip END
endif
echo "unsuccessful link"
LAB END
```

The "failat 20" at the top of MAKEALL, combined with the "quit 20" in MAKEIT, will cause MAKEALL to stop if MAKEIT wasn't able to compile any one of the files. The whole process is started by typing "execute MAKEALL" from the CLI. If you don't need to compile all the files every time, all you have to do is load in MAKEALL, delete the "execute makeit . . ." lines you don't need, save the remaining file as TEMP, and, from the CLI, type "execute TEMP".

This is in the format expected by the Manx compiler, but could easily be changed to work with Lattice or AmigaC. Once my programs got beyond two source files, I found this to be a great time saver.

The Amiga could also be made to actually tell you the progress of the compile by replacing every "echo" above with a "say" and taking out the quotes.

Michael A. Sokolewicz
San Francisco, CA

If you have an idea you'd like to share with our readers, send it to Hors d'oeuvres, AmigaWorld *Editorial, 80 Elm St., Peterborough, NH 03458. If your idea gets published, you'll receive an* AmigaWorld *T-shirt for your efforts. (Don't forget to tell us your T-shirt size.)* ■



Bogie at 6 o'clock!
HARRIER
COMBAT SIMULATOR
MINDSCAPE INC
FLIGHT SCHOOL'S OVER—NOW GO TO WAR.
The Harrier's hot to go—but she lifts off slowly like vertically rising thunder! Then after pausing motionless at 100 feet, she rips into the sky at Mach 1, pulling your face into an involuntary smile.
Your mission: destroy the enemy's desert command post and key oil reserves. They've got an air-force, ground forces, tanks and 350 SAMs.
Big deal. You've got the world's first combat-proved vertical take-off fighter armed with heat-seeking missiles, 30mm cannon, advanced radar, chaff, flares. The whole shebang.
Plus, you've got VIFF options to let you lay some new moves on those bogies who roll, dive, loop, spin, fire afterburners to jump on your tail.
You're at war in 3-dimensional space with an enemy who can destroy you. But with the Harrier, some strategic thinking and some skill, yours may not be Mission Impossible.
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MINDSCAPE
FREE POSTER OFFER. SEE DETAILS IN BOX. Visit your retailer. To purchase by mail send your card number and expiration date, check or money order for $29.95 (C64 & C128), $34.95 (IBM & compatibles) or $49.95 (Atari ST & Amiga) plus $3.00 handling to Mindscape, Inc., P.O. Box 1167, Northbrook, IL 60065. Allow 3-5 weeks for delivery. Lawyers like this part: © 1988 Mindscape, Inc. Mindscape is a trademark of Mindscape, Inc. Commodore, IBM, Atari ST and Amiga are registered trademarks of Commodore Electronics, Ltd., International Business Machine, Atari, Inc., and Commodore Amiga, Inc., respectively.

REVIEWS

PaintJet

Squaring off with pigments on paper versus the glowing phosphors of Amiga graphics.

By Morton A. Kevelson

THE PAINTJET COLOR Printer had a tough act to follow. An established leader in electronics engineering, Hewlett-Packard, PaintJet's maker, has gained considerable respect for their laser printers and precision plotters. This release needed to perform some fancy, dependable footwork to garner the same respect.

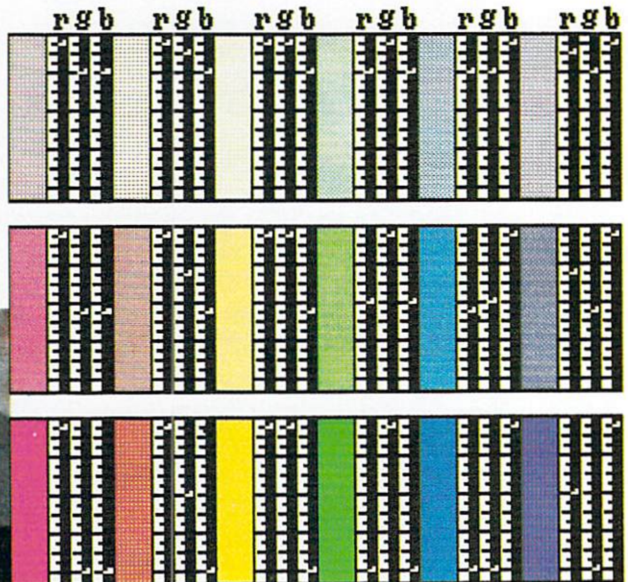
As with most other color printers, PaintJet uses black ink along with cyan, magenta and yellow. The color balance of the PaintJet's inks is such that blue shades tend to print true. The tradeoff is that greens tend toward blue. (By comparison, most other color printers try to get the greens right while shifting blues toward purple.)

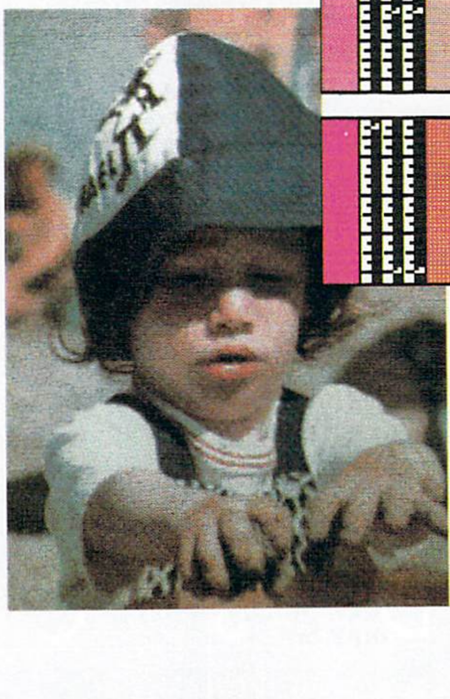
Ink is provided on two cartridges: one contains black and the other holds the colored inks. The cartridges also contain the primary ink jets, which are activated by a double row of electrical contacts, also built into the cartridge. This feature should make PaintJet relatively maintenance free because replacing cartridges effectively replaces the ink jets as well. Because the black cartridge contains 30 jets and the tricolor cartridge has 10 jets per color, PaintJet can lay down a black swath three times the width of the individual colors.

Hewlett-Packard rates the black cartridge ($27.95) for 1,100 pages of text, and the color cartridge ($34.95) at 180 pages of color graphics. Factoring in the cost of the special PaintJet paper ($17.95 for 250 sheets) the estimated cost per full-page color graphic is between 30 and 40 cents, which is in the middle range for the color printers I have worked with. Consider, too, that a replacement ink cartridge also buys you what amounts to a replacement printhead.

Ink cartridge installation is easy: flip open a hatch at the rear left corner of the printer to expose the priming pump, insert the cartridge into the primer, press down and wait for the three transparent windows to fill with ink. Then, to expose the wiper and printhead carriage, open the right front hatch. Simply pass the cartridge through the wiper, pop it into place, flip up the latch and close the lid. The self test should verify that all is in order. If printing problems arise, just clean the electrical contacts with the brush contained in the front cavity. The procedure is fully outlined and illustrated, complete with a sample of the test, on a pull-out plastic card.

The PaintJet accepts continuous, z-fold paper as well as single sheets in US (8½ × 11 inches) and Metric (210 × 304.8 mm) sizes. The built-in paper-handling device consists of a friction-feed mechanism with pin feed. The pin feed's minimal adjustment range precludes the use of narrow-width continuous feed papers, and since the friction feed cannot ►





Two samples of PaintJet's output: a color scale and a digitized HAM image.

be disconnected, it is impossible to manually align single sheets. However, the feed mechanism properly and precisely positions the paper by itself without difficulty. Although the printer accepts any paper, PaintJet's special quality, heavy stock, micro-perforated paper yields the best results.

The power supply is an external black box without a control switch. The control panel consists of a power button, two indicator lights, a top-of-form button and the ubiquitous line-feed and form-feed buttons. When depressed during power up, the form-feed button generates a self test, while pushing the line-feed button results in a two-page demo. Holding down the top-of-form button puts the printer into transparency mode. The back panel contains the power jack, interface connector and set-up switches.

One interface cable (either a Centronic, RS-232 or HP-IB, depending upon your needs) is supplied with the printer. With the interface provided, the printer is ready to use right out of the box. 250 sheets of the special z-fold paper, five sheets of transparency film and a set of ink cartridges are also included.

With PaintJet's maximum horizontal and vertical resolution of 180 dots per inch (dpi) and a dot size of 0.0085 inches, you can generate some very detailed printouts. At this resolution, the PaintJet can print in the four basic ink colors as well as red, green and blue. PaintJet also supports a 90 × 90 dpi resolution, in which case it can generate up to 330 colors. But, because the Amiga's printer driver does not use the lower resolution mode, the driver generates all 4,096 colors by dithering in a four-by-four dot matrix at 180 dpi.

Unlike most dot-matrix printers, PaintJet neither needs nor offers a draft-text mode. PaintJet prints out an impressive, near-letter-quality text at a very respectable 167 characters per second (cps) for 10-character-per-inch (cpi) text. Hewlett-Packard rates the printer at 16.7 inches per second, which means that printing speed goes to 200 cps for 12 cpi text, and 300 cps for 18 cpi text. (Note that text prints bi-directionally while graphics do not.) The built-in fonts are Courier at 10 cpi and Letter Gothic for the smaller sizes.

Basic text features include underline and bold; italics are not supported. A generous selection of foreign language symbol sets, including British, Danish, French, German, Italian, Norwegian, Spanish and Swedish are provided. You can also download alternate character sets from your computer into PaintJet's eight-kilobyte RAM buffer. While the PaintJet will not generate subscripts and superscripts via a direct command, you can print them through a combination of vertical offset and condensed printing, as the printer can vertically position paper in pixel increments.

What a Difference a Driver Makes

PaintJet's color-dither patterns, generated by the Amiga's printer driver, were the tightest I have seen. Colors, as well as blacks, are satisfactorily intense. Although the standard blacks were not the deepest I have seen, those generated through transparency mode were. (However, transparency mode tends to oversaturate most colors.)

It appears that Commodore will support PaintJet by including a driver for it on future releases of AmigaDOS. The version 1.2 printer driver required 24 minutes to generate a full-page (8½ × 11 inches) lo-res dump. A preliminary copy of version 1.3 reduced the dump time to less than five minutes, laying down two to nine times as many dots as its competitors do in the same or greater amounts of time. Version 1.3 corrects the color balance (to true blues *and* true greens) in exchange for slightly fewer unique colors.

Based on the overall quality of its text and graphics, the Hewlett-Packard PaintJet comes out ahead of the other color printers I have worked with. Although its initial cost may seem a bit high, operating costs are moderate, and PaintJet seems able to provide maintenance-free service. An historic look at Hewlett-Packard printer pricing suggests that PaintJet's price might drop substantially as distribution increases. If you are in the market for a color graphics printer, then take a good look at PaintJet.

PaintJet Color Graphics Printer
Hewlett-Packard
19310 Pruneridge Ave.
Cupertino, CA 95014
800/367-4772
$1,395
No special requirements.

KindWords TextPro

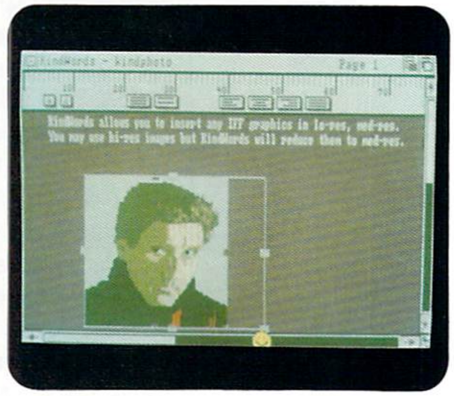
Tell your story with words and pictures.

By Neil Randall

1987 MARKED THE beginning of the word processor explosion, and at year's end KindWords and TextPro arrived on the scene. In many ways their appearance rounded out, at last, the selection of Amiga word processors. Both merge text and graphics, and both show on screen what you will ultimately see on the printed page.

KindWords

Complete with spacing and justification icons, margin and tab markers, and ruler line, Kindwords appears to be a reworking and upgrading of that old standby, Textcraft. It even imports Textcraft files



Resizing an image is simple.

with all formatting. The colors default to a very readable but somewhat bright black on white, and a menu command allows you to switch to whatever colors you have set up in Workbench. Cut, Paste and Copy are all accessible from the Edit menu.

Through menus and submenus, KindWords lets you control Cut, Paste, page size and document format, use superscripts and subscripts (which appear as such on the screen), change type styles (Roman, italic, bold, underline and any combinations) and open, save and insert files. Those familiar with Textcraft will take to these functions immediately, and find the interface superior. ►



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Circle 166 on Reader Service card.

KindWords' Print Merge feature, well explained in the manual, allows you to integrate a data file with a document. You can change the specifics, such as the names and addresses, to customize a standardized letter, for example. It allows you to merge files and import low- or high-resolution IFF graphics. These images can contain up to 16 colors. The program lets you see the image in monochrome, gray scales, or if you prefer, all 16 colors (at the expense of screen redrawing speed). The graphic can be moved horizontally on the page, cropped or resized.

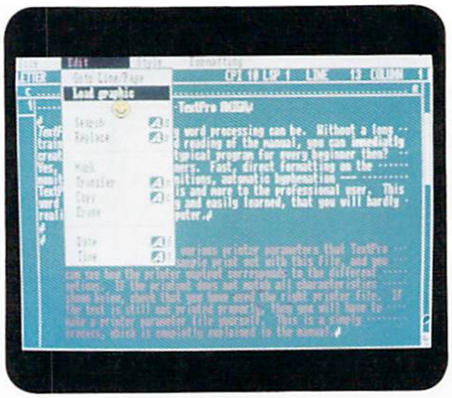
Other unique features include a command that opens Workbench. This is useful for accessing other programs, formatting data disks and working with Preferences. Headers and footers can run to 15 lines; they allow all text styles, as well as the insertion of current date and time. Pagination is available in five different styles including upper- and lower-case Roman numerals. One command changes to the Foreign keyboard, with various foreign characters, and another changes it to the Symbols keyboard, with its lines, boxes and other special symbols. Also available is a fast, easy-to-use, 90,000-word spelling checker which displays the misspelled word along with several similar words from within the dictionary.

KindWords' use of fonts is one of its most interesting features. The program abandons those of Workbench in favor of its own Roman font in point sizes eight, 12 and 14. To print your document, you must select Draft, Final (near-letter) or KindWords' special SuperFont quality. The program contains custom printer drivers for eight printers (with promises for more) which make use of the specially-designed fonts. SuperFonts produce attractive, high-quality printouts even from inexpensive dot-matrix printers.

KindWords is too slow for a serious touch-typist (I regularly find myself typing beyond the screen display), but it is highly usable. It does not allow more than one document in memory at a time and it contains no indexing or table of contents generation, but these are it's only serious drawbacks.

TEXTPRO

Where KindWords will appeal to those who don't want to stray too far from familiarity, TextPro seems to strive for uniqueness. A port from the Atari ST, TextPro's manual establishes from its opening pages that it is not meant for beginners. The first thing you have to do is install it, which means typing in personal information such as your name, address and the disk serial number. You must then select a printer driver, and finally you are allowed to type.



Surround graphics with TextPro type.

Deciding on the appropriate printer driver isn't especially easy. The screen displays a list of rather cryptic abbreviations from which to choose. Standard Printer (an Epson configuration) is the default, but also shown are such items as hr15.prt, lq800.prt, lkml192.prt, sg10.prt, and s180-ai.prt. I have an old Star Gemini 10X printer, so I guessed that sg10.prt would be the one I needed. But nowhere in the manual were the abbreviations explained, and I'm still not positive I selected the correct one. Nor does the program seem to allow you to default to a Preferences printer driver. For those with printers not directly supported, a lengthy appendix explains how to create your own driver.

Unless you use standard-sized paper and the standard defaults, formatting and printing can be somewhat confusing. To set such necessities as line spacing, page size and header and footer spacing requires calling up a requester. This requester refers to line spacing not as single or double, but as calculations of typographical points. Thus a single space for most printers will be 12 (12/72″), while for others it will be 10 (10/60″). If you change some of the figures, you will have to re-calculate the printable height and spacing from top and bottom—otherwise your page might not break at the perforation.

TextPro allows you to create an output list for printing linked documents from disk, and it lets you choose either your floppy drives, your hard drive or your RS-232 interface for saving and loading files. The program includes a C-Source mode, designed for editing C-programs, which indents braces and checks that opening braces have corresponding closing braces. Unlike Kindwords it does not hinder fast typists, and its on-screen font is the most readable I have seen on the Amiga.

Like KindWords, TextPro imports IFF graphics. But although it doesn't support color graphics, the program adds two important features to the process. You can merge text with graphics in the same horizontal area, by first placing the text and then overlaying the graphic. Although hardly easy to execute, the process adds considerably to the outcome. TextPro includes a utility called BTSnap, which lets you take snapshots of Amiga screens. You simply load it into memory and then load the program you want to capture. By simultaneously pressing the Amiga and Help keys you invoke BTSnap, which lets you frame a portion of the screen and save it on a RAM disk or a specified drive as an IFF graphic for import into TextPro.

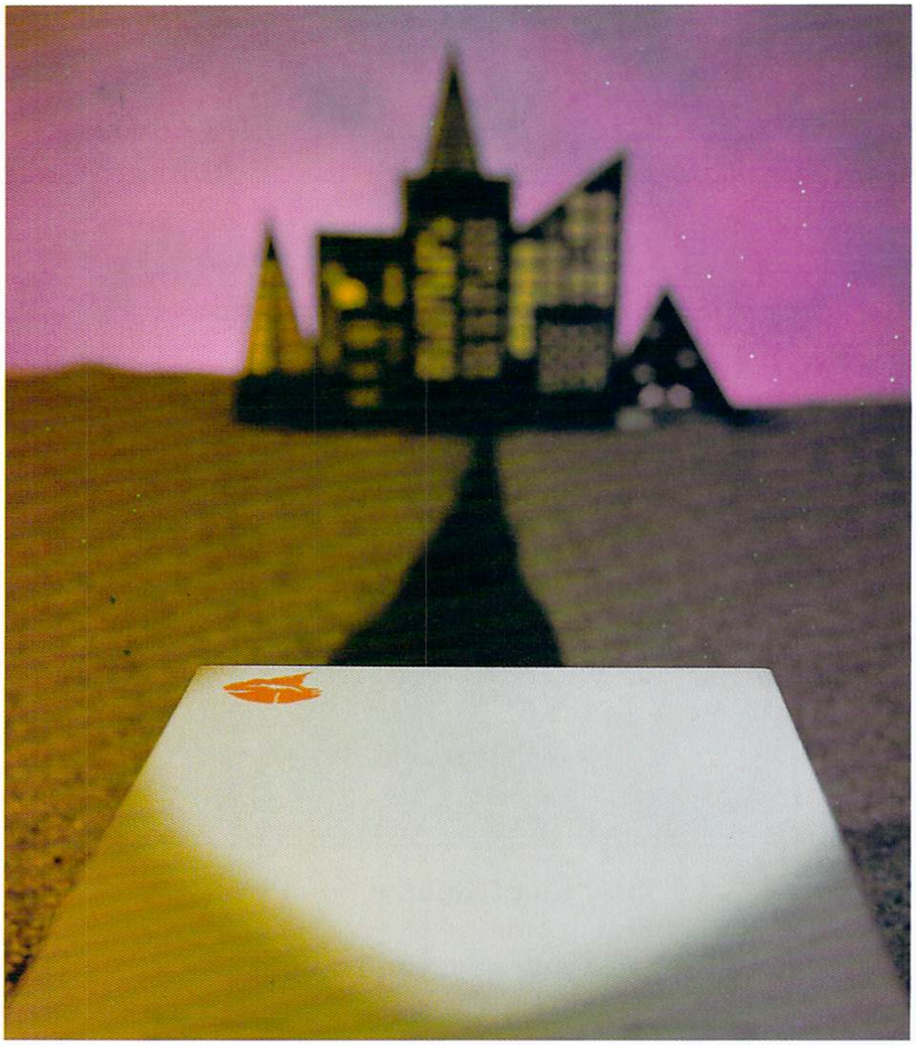
Unquestionably, TextPro's most impressive single feature is its customizable function keys. You can assign any text string, command function or strings of functions to any function key. There are 30 such assignations: the 10 F-keys by themselves, the F-keys in combination with the Shift key, and the F-keys in combination with the Alt key. Each assignment can be up 160 characters long. This is a useful and friendly macro system, and TextPro users will find themselves invoking the function keys quite often.

SO WHICH TO CHOOSE?

If you like Textcraft and just wish it had more to offer, pick up KindWords. If you want something different, with features designed for those unafraid of the technical side of things, TextPro has a great deal to offer.

Neither program is destined to replace WordPerfect or desktop publishing software, but both KindWords and TextPro are very good values for non-

Continued on p. 76 ►



TAKE A DRIVE INTO TOMORROW

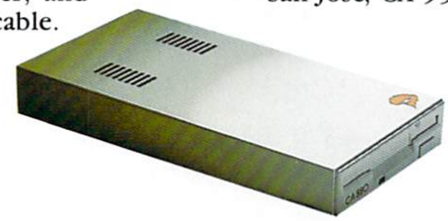
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BASIC By The Numbers

Wherein our intrepid guide to Amiga Basic tries to explain why two of the programs he "suggested" you try last month can't really be done with Amiga Basic.

By Bob Ryan

23 Shooting From the Hip . . . and Hitting My Foot

THIS MONTH, as usual, I'm writing Basic By The Numbers at the last minute (actually, after the last minute). This time, however, I have a legitimate excuse. I've been trying to do the "homework" I left you with last month, namely, to reproduce exactly the programs in the Workbench Demos drawer using Amiga Basic. Little did I realize as I wrote last month's column what a chore two of the programs would be. As you remember, I did Dots last month, and as it turns out the Boxes demo isn't difficult to reproduce, either. Lines and Spots are another story, since both incorporate features not readily available to Amiga Basic programmers. Before I get to the problems with these programs, however, let's examine how you go about programming the Boxes demo in Amiga Basic.

The most important step in programming is identifying the problem you want to solve. In our case, we first want to reproduce the output of the Boxes program. When you run Boxes, it displays an infinite, randomly-sized and randomly-colored series of rectangles. The output window is movable and resizable, and no part of any rectangle is drawn outside of the display window. We've got to do the same thing with Amiga Basic.

Drawing rectangles with Amiga Basic is a function of the LINE statement, which, as you can imagine, also lets you draw straight lines. Looking at page 8-72 of the Amiga Basic manual, you'll see that the LINE statement draws a line between two points that you specify, in the color you specify. If you include the "b" option, the LINE statement will draw a rectangle using the specified points as opposite corners of the rectangle. The "f" option tells Amiga Basic to fill the just created rectangle with the specified color. To see what I mean, try these examples:

```
REM Line Drawing
LINE (25,35)-(600,150),3
END

REM Box It
LINE (25,35)-(600,150),3,B
END

REM Fill It
LINE (25,35)-(600,150),3,BF
END
```

As you can see, LINE is a versatile statement.

Note that the coordinates and color number used in the LINE statement don't have to be constants; you can just as easily use variables for these values. To recreate the Boxes demo, you use the RND function (see Basic By The Numbers, March '88) to generate these values. Your Boxes program should look like this:

```
REM Amiga Basic Boxes
RANDOMIZE TIMER
Loop:
  x1 = INT(RND*640)
  y1 = INT(RND*200)
  x2 = INT(RND*640)
  y2 = INT(RND*200)
  colnum = INT(RND*4)
  LINE (x1,y1)-(x2,y2),colnum,BF
  GO TO Loop
END
```

Since the standard Amiga Basic output window is 640 pixels wide and 200 pixels high, you have to generate random x-coordinates between 0 and 639 and y-coordinates between 0 and 199. You also have to generate color numbers between 0 and 3. All this is done in lines four through eight of the program. Line 9 puts the rectangle into the output window and line 10 loops to draw another random rectangle.

Although close to the Workbench demo, the program doesn't function exactly like ►

the Boxes demo. The difference is that the Workbench demo only draws in the visible portion of the output window while the above program draws in a 640 × 200 area even if you resize the window to a smaller size. To get the program to adjust to the size of the window requires a method to detect the current size of the output window.

```
REM New Boxes
RANDOMIZE TIMER
Loop:
  xmax = WINDOW(2)
  ymax = WINDOW(3)
  x1 = INT(RND*xmax)
  y1 = INT(RND*ymax)
  x2 = INT(RND*xmax)
  y2 = INT(RND*ymax)
  colnum = INT(RND*4)
  LINE (x1,y1)-(x2,y2),colnum,BF
  GO TO Loop
END
```

This program introduces the WINDOW(*n*) function. When you call the WINDOW(*n*) function with a 2 parameter, the function returns the x dimension of the current output window. WINDOW(3) returns the y dimension of the window. (For more on the WINDOW(*n*) function, see page 8-160 of the Amiga Basic manual.) The program is now a good replica of the Workbench Boxes demo.

24 LINE UP

THE LINES DEMO wouldn't be difficult to reproduce if Amiga Basic let you define windows larger than the output resolution of the Amiga. Intuition, the Amiga interface system, allows programmers to define windows up to 1024 × 1024 pixels. This is the type of window used in the Lines demo. Since Amiga Basic windows are restricted to the maximum visual resolution, you can't produce a Lines demo that scrolls the way the Workbench demo does. Given that, you can still write a program that works like the Lines demo. It might look something like this:

```
REM Amiga Basic Lines
RANDOMIZE TIMER
x1 = 15
y1 = 15
x2 = 70
y2 = 45
dx1 = INT(RND*10)+1
dy1 = INT(RND*10)+1
dx2 = INT(RND*10)+1
dy2 = INT(RND*10)+1
colornum = 3
length = INT(RND*25)+5
Start:
  LINE (x1,y1)-(x2,y2),colornum
  x1 = x1+dx1: IF x1 > 630 or x1 < 10 THEN dx1 = dx1 * -1
  y1 = y1+dy1: IF y1 > 190 or y1 < 10 THEN dy1 = dy1 * -1
  x2 = x2+dx2: IF x2 > 630 or x2 < 10 THEN dx2 = dx2 * -1
  y2 = y2+dy2: IF y2 > 190 or y2 < 10 THEN dy2 = dy2 * -1
  count = count+1
  IF count = length THEN
    colornum = INT(RND*4)
    count = 0
    length = INT(RND*25)+5
  END IF
GO TO Start
END
```

In this program, the variable pairs x1,y1 and x2,y2 represent the endpoints of the line drawn in the LINE statement. The variables dx1 (for delta, or change in, x), dy1, dx2 and dy2 are randomly chosen values that indicate how much x1, y1, x2 and y2 change each time through the line drawing loop. The conditional statements keep the values of the endpoints from exceeding the dimensions of the window by reversing the appropriate delta value when the endpoints get close to the edge of the display. The counter at the bottom of the loop randomly changes the color of the lines drawn and the number of lines drawn in the last chosen color. Due to the lack of scrolling, the program isn't an exact duplicate of the Workbench Lines demo, but it's close and an interesting program nonetheless.

25 HERE SPOT!

REPRODUCING THE SPOTS demo dredges up some interesting problems. Before discussing them, let's look at the program.

```
REM Amiga Basic Spots
RANDOMIZE TIMER
Loop:
  xmax = WINDOW(2)
  ymax = WINDOW(3)
  cx = INT(RND*xmax)
  cy = INT(RND*ymax)
  IF cx > xmax * .5 THEN
    maxrx = xmax-cx
  ELSE
    maxrx = cx
  END IF
  IF cy > ymax * .5 THEN
    maxry = ymax-cx
  ELSE
    maxry = cy
  ENDIF
  IF maxrx > maxry THEN
    rmax = maxry
  ELSE
    rmax = maxrx
  END IF
  rad = INT(RND*rmax)
  aspect = RND
  colnum = INT(RND*4)
  CIRCLE (cx,cy),rad,colnum,,,aspect
  GO TO Loop
  END
```

So far so good. This program draws random circles and ellipses on the screen in random colors. The convoluted IF. . .THEN statements, which come after the program determines the center (cx,cy) of the object, keep the program from using a radius that would draw part of the object out of the window. Once a usable radius is determined, the program picks a color and an aspect ratio (see page 8-33 of the Amiga Basic manual) and draws the object.

The problem is that the program only provides the outlines of the objects; it doesn't fill them in. To do that, you can either write your own circle fill routine or you can use the PAINT statement. In the interests of brevity, let's try the PAINT statement. ►


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Actual Amiga Screens

26 HIT OR MISS

TRY INSERTING THE following line into the Spots program just after the line with the CIRCLE statement:

```
PAINT (cx,cy),colornum,colornum
```

The PAINT statement is a general-purpose fill command. From the specified pixel, it paints all pixels in every direction the color specified by the first color number until it reaches a border consisting of pixels of the second color number. In other words, it fills in an area defined by the second color number with the color specified by the first color number. In my example, since the color numbers for the paint and the border are the same, the statement paints all pixels inside the border (the circle or ellipse drawn by the CIRCLE statement) with the color of the border.

The problem with using the PAINT statement in the Spots demo is that it doesn't necessarily paint the entire circle or ellipse. Notice that some parts of some objects don't get filled in. The PAINT statement looks for any border, not just the edge of the object you drew with the CIRCLE command. Therefore, it will sometimes use previously painted objects as a border, instead of the edge of the newly drawn circle or ellipse, and stop filling prematurely. This results occasionally in unfilled circles.

The PAINT statement can be tricky to use. It also exhibits an annoying tendency to crash my system for no apparent reason. I suspect the PAINT statement contains a bug of some sort.

27 SPRING BREAK

TIRED OF USING the four drab Workbench colors? Next time, I'll show you how to define your own colors. At the same time, you'll see how you can increase the number of colors available to you by creating custom screens. Until then, send along any questions or comments to Basic By The Numbers, AmigaWorld, *80 Elm St., Peterborough, NH 03458.* ■



THE RIGHT CONNECTIONS

Put your Amiga "on line" and enjoy the many pleasurable—and useful—benefits of both large information networks and local bulletin board services.

By Peggy Herrington

BING CROSBY'S FATHER O'Malley of "Going My Way" and "The Bells of St. Mary's" would probably have been the 1940s equivalent of the SYSOP of today's electronic bulletin board service. Remember, all you had to do to have any question answered or problem solved was to "Dial O, for O'Malley." Well, Bing is long gone, but you can still dial "O" to get an awful lot of valuable information and advice.

Whether logging on to a large commercial information provider with hundreds of useful services and database files, or just linking up with other Amiga users on a local bulletin board, you can gain access to a world of on-line information and shared interests. All you need are the "right connections." And while Father O'Malley may have had the right connections with The Man Upstairs, all you'll need is a modem, communications software and access to the telephone lines.

Of all the peripherals you can connect to the Amiga, the small and relatively inexpensive modem is one of the most versatile. This little box gets its name from the fact that it MOdulates and DEModulates binary data (ones and zeros) into audible tones that can be sent over standard telephone lines. Connected to a computer, a modem will take you to a world of communications that was all but unknown to novices a few years ago—and is still unknown to many. And you can get to that world from the comfort of your den, bedroom or office, 24 hours a day.

Want to know more about this fantastic realm of almost instant communication, information and shared experience? The following guide will help get you on line and, with a little practice, will have you "riding the wires" with the best of them.

COMMERCIAL NETWORKS

THE FOLLOWING IS a fairly comprehensive list of commercial networks, or "information providers" as they are known, that would be of most use to Amiga users. Membership fees and baud rates for accessing these services are contained in the sidebar "Commercial Network Fees and Rates" accompanying this article.

FRIENDLY ACTION: AMERICAN PEOPLELINK

Although things change rapidly when it comes to electronic media, the network consistently offering the ►

ILLUSTRATION BY PETER FIORE

Plink, through its AmigaZone, offers a consistently high level of Amiga-specific activity, with new services added on a fairly regular basis.

most Amiga activity for the past couple of years has been American PeopleLink, known to familiars as "Plink." Structured like most computer forums or on-line clubs, Plink's AmigaZone consists of separate message and program libraries and a live, real-time conference area in which you navigate by following menus or typing commands on your screen. Its strength lies with its knowledgeable and friendly chairman, Harv Laser, and his crew and with Plink's affordable connect fees, which have attracted an enormous membership and make it very people-oriented. Information is fresh and updated continually—hundreds of public messages "scroll off the top" of the system (become unavailable) every few weeks—and participation is very high and very keen. It's a rare evening or weekend afternoon that doesn't find a group of Amiga owners discussing industry news or hot new programs, despite the fact that regular conferences on specific topics (graphics, music, games, programming and so forth) are held four or five nights a week. The AmigaZone's Sunday night general conferences consistently attract scores of people.

More new public domain and shareware programs are uploaded to Plink each week than even I care to download. All the networks encourage uploading—the process of transferring files *to* them (for members to download)—by making upload time free of connect fees. There are literally hundreds of public domain and shareware programs available merely for the cost of downloading them. Programs range from handy system and programming utilities and productivity software to spectacular animations and music files, and many are as good as their commercial counterparts. When "Windowed Xmodem" (WXModem) protocol is used, Plink's rate of transfer is the speediest of all commercial networks, including CompuServe and GEnie with their dedicated phone lines. Considering Plink can be had at 2400 baud for as low as $2.25 an hour plus $10 a month for the Frequent Plinkers club, and $30 for PC Pursuit (see "Fees and Rates" sidebar for a description of this service), you can do a lot of communicating and/or download several dozen programs for less than you would spend on the average commercial package (say $100).

Despite the lack of a decent operations manual (members get a pamphlet with some cryptic abbreviations in it), Plink, through its AmigaZone, offers a consistently high level of Amiga-specific activity, with new services added on a fairly regular basis (shopping, for instance, was introduced recently), and a lively CB emulator offering (PartyLine) that is proving more popular than many similar services on other networks. Overall, the system is geared to computer users, leisure-time activities and live communications. It's good value with a heavy Amiga emphasis.

Rubbing The Lamp: GEnie

If you hunger for more diversity in your on-line fare, GEnie offers a wider variety of on-line services than does Plink. Newsgrid, for instance, will automatically put stories containing designated keywords in your on-line mailbox, and Grolier's Encyclopedia is available to help the kids with their homework. Stock market reports are updated daily, and Charles Bowen gives you telecommunications industry news in weekly doses. American Airlines' Easy Sabre is available, there is a shopping service that discounts Amiga software, and CB offers more family-oriented conversation than most similar offerings on other networks.

The Amiga RoundTable, managed by Deb Christensen, has message and program libraries along with a live conference area, and at $5 per hour for 1200 baud you can do a lot of "talking" and downloading for the money. Xmodem protocol over dedicated GEnie phone lines makes for flawless file transfers at just slightly slower speeds than Plink, and the number of Amiga files on line is comparable—both systems have more good software and info than you can shake a joystick at. The message base is structured differently, in that messages remain available and are segregated into categories and topics for reference once you learn to navigate "command mode."

GEnie sports a killer interactive flight simluation game for Amiga and Macintosh users. According to Aces I've played with, "Air Warrior" is what the dogfight mode in subLOGIC's Flight Simulator II should have been. You can fly a variety of WWII airplanes, and there are colorful views, sound effects and maps that you download along with the software providing the graphics and terminal program needed to play it on line with other GEnie subscribers. Depending on your efficiency, downloading it requires three or four hours of connect time, but the off-line practice mode and instruction files let you earn your wings without being a sitting duck for the opposition.

Another hot game prospect, GemStone, a multiplayer text adventure in the style of Dungeons & Dragons, debuted on GEnie as this article was being written. Although it can be played with any brand of computer, GemStone is a distinctively Amiga-oriented game. Indeed, its designer, Dave Whatley, developed and programmed GemStone on the Amiga because its multitasking capabilities made it the only personal computer suited for the job. Live, participating GameMasters and attention to detail promise ►

Commercial Network Fees and Rates

COMMERCIAL NETWORKS CAN be accessed without incurring long-distance telephone charges from almost any decent-size population area. If you live in an outlying area, you'll have to pay long distance to the nearest city with direct CIS or GEnie lines, Telenet or Tymnet access. Connect fees are shown here by the hour but are actually prorated to the minute while you are on line. Rates are higher for weekday business-time access (called prime time), 7AM to 6PM local time, except through Tymnet where prime time is 7AM to 7PM. Non-prime time consists of non-business hours on weekdays and all hours on weekends and designated holidays. In the listings below, the abbreviations "PT" and "NPT" refer to "Prime Time" and "Non-Prime Time," respectively.

PC Pursuit

Telenet provides a service called PC Pursuit, which (for $30 a month, plus a one-time $25 sign-up fee) lets you call computers in 25 major metropolitan areas during non-prime time (6PM to 7AM weekdays, 24 hours weekends and holidays) without incurring long-distance telephone charges. Accessible from over 18,000 local Telenet phone numbers, PC Pursuit packet switches data and therefore will not work for voice. The service is available during prime time for $10 to $14 per hour. For more information call 800/TELENET voice.

Although often requiring repeated dialing because of heavy usage, PC Pursuit offers its members during non-prime time hours unlimited connect time with computer-owning friends and electronic bulletin boards (literally *any* computer in the areas serviced) and reduced connect fees on such networks as PeopleLink (Chicago) and The Well (San Francisco) that otherwise charge $2 per hour for access through Telenet or Tymnet. Members may call into 25 cities (with more to be added this year) determined by the area code of the answering computer:

404-Atlanta GA
617-Boston MA
312-Chicago IL
216-Cleveland OH
214-Dallas TX
303-Denver CO
313-Detroit MI
818-Glendale CA
713-Houston TX
213-Los Angeles CA
305-Miami FL
414-Milwaukee WI
612-Minneapolis MN
201-Newark NJ
212-New York NY
215-Philadelphia PA
602-Phoenix AZ
503-Portland OR
919-Research Triangle Park NC
801-Salt Lake City UT
415-San Francisco CA
408-San Jose CA
206-Seattle WA
813-Tampa FL
202-Washington DC □

—PH

American PeopleLink

800/524-0100 voice
MEMBERSHIP FEE: None
AVAILABLE VIA: Telenet, PC Pursuit, Tymnet
BAUD RATES (hourly)
- NPT: $4.95 (300/1200), $11 (2400)
- PT: $12.95 (300/1200), $14.95 (2400)
- With PC Pursuit (Fee: $25/mo.)
- NPT Only: $3 (to 2400)
- With Frequent Plinkers (Fee: $10/mo.)
- NPT Only: 25% discount (to 2400)
- With Both Services (Fee: $35/mo.)
- NPT Only: $2.25 (to 2400)

BIX

Byte Information Exchange
800/227-2983 voice
603/924-7861 from New Hampshire
MEMBERSHIP FEE: $39 (one-time)
AVAILABLE VIA: Tymnet
BAUD RATES (hourly)
- NPT: $11 (to 2400)
- PT: $20 (to 2400)

CIS

CompuServe Information Service
800/848-8199 voice
614/457-8650 from Ohio
MEMBERSHIP FEE: None
AVAILABLE VIA: CIS direct lines, Telenet, Tymnet
BAUD RATES (hourly)
- Any Time: $6* (300), $12.50* (1200/2400)
- *Plus $.25/hr. for CIS phone lines
- *Plus $2/hr. for Telenet or Tymnet (NPT)
- *Plus $6/hr. for Telenet or Tymnet (PT)
- CB Service Only (Fee: $25/mo. or $100/mo.)
- Any Time: $4* (at $25/mo. fee)
- Any Time: $1* (at $100/mo. fee)
- *Add on CIS, Telenet or Tymnet access fees

GEnie

General Electric Information Services
800/638-9636
MEMBERSHIP FEE: $29.95 (includes $10 on-line time)
AVAILABLE VIA: GEnie dedicated phone line
BAUD RATES (hourly)
- NPT: $5* (300/1200), $12.50* (2400)
- PT: $35* (300/1200), $42.50* (2400)
- *Plus $2/hr. from some outlying areas

The Well

Whole Earth Software Catalog
415/332-4335
MEMBERSHIP FEE: $8/mo.
AVAILABLE VIA: Tymnet, PC Pursuit
BAUD RATES (hourly)
- NPT: $5 (300/1200)
- With PC Pursuit (Fee: $25/mo.)
- NPT: $3 (300/1200)

challenging adventures for user-designed characters from fighters to clerics.

Granddaddy Of 'Em All: CompuServe

You can't beat the diversity of services available from CompuServe Information Service (CIS), one of the original "popular" networks. CIS is nothing less than vast—offering extensive (occasionally surcharged) financial services and stock market reports, on-line shopping, great interactive games, a wildly popular CB simulator and special interest groups, or "forums," devoted to every conceivable focus.

But despite a membership of nearly 300,000 users, when it comes to Amiga information, the pickings are relatively slim. Plink and GEnie have more to offer. AmigaForum program libraries are sparse by comparison, and the conferences are less well-attended. CIS also has hefty connect fees of $12.75 per hour for 1200-baud access. Its one strength is that the message libraries are surprisingly active and contain quite a high level of technical opinion.

Techie Haven: BIX

If you are an Amiga developer or if you are after technical expertise, BIX (owned and operated by *Byte* Magazine) is the place to be. Although lacking any form of real-time, live communications and sporting somewhat pricey connect fees ($11/hour for 1200-baud access), BIX lets you rub elbows with Amiga engineers and programmers and tap into a library

The New "Look" of Communications Software

A DAZZLING GENERATION of communications software has come to life with the Amiga. Featuring the drama of color graphics and sound, they come with all the bells and whistles you will ever need to get on line, capture text and transfer (and "chop" Xmodem) files. These programs—ACO, Access, AMIC and Conference Television—are not available retail, nor are they in the public domain; they are shareware. Although they are copyrighted and are freely distributable on disk or electronically, their authors ask only that you make a small contribution if you use and like them.

Shareware Stars

ACO, based on popular but plain COMM by D.J. James of PeopleLink, is designed to be used in real-time conference there. User-created graphics, usually in the form of expressive faces, fill chairs along the top and bottom of the screen, so that you can see what the people you are talking with look like—at least to themselves.

Access, programmed by Keith Young, does not have user-created graphics, but it too is based on COMM. It presents a black screen with compact rows of colorful icons along the top or bottom on which you click the mouse to do such things as transfer files, change parameters or dial your favorite computer service. Designed as general-purpose communications software, Access has Xmodem, WXmodem and CIS "B+" protocols, to name a few.

AMIC (see Notepad, p. 12), by Dave Salas of BBS fame, is also based on COMM (although, like Access, you might not know it unless you look closely). It includes several protocols and there is a special section for registered users on GEnie where you can get help directly from Dave.

Finally, Conference Television, designed by Micro Cybernetics Corp., is conferencing software for use especially on CompServe's AmigaForum. CTV, as it is commonly called, features animated user-designed faces and arms with real digitized sound you can broadcast to other Amigans who are also on line at the same time—with each participant's animation and text appearing in a separate small window on screen.

A Useful Disk

These are all full-featured programs and, like many shareware and public-domain programs, are of superior quality. As far as I'm concerned, they are as functional (not to mention more attractive and cheaper) than their commercial counterparts. Each eliminates the need to strip Xmodem padding from files transferred electronically, allows multitasking and has standard pull-down menu operation. With the possible exception of their documentation (sometimes a disk-based text file that is an ongoing narrative as successive versions are released, which can be tough to sort out), they are the stuff that commercial programs are made of. While widely available on line, if you can't get your hands on them, I have put together a disk of those I find most useful (terminal programs, utilities and text-based help files for ARC, ZOO and other necessary evils) that I will send you for the princely sum of ten bucks, providing you promise to make shareware donations for the ones (if any) that you actually use. To order this disk, send a check or money order for $10.00 (payable to me, not the magazine) to:

Peggy Herrington
Telecommunications Disk
c/o *AmigaWorld*
80 Elm Street
Peterborough, NH 03458 □

of tutorials and programs that could save you substantial development time. Capturing the delightful weekly message digests compiled by moderator Joanne Dow and her assistants, and determining those you are interested in off line (along with writing your responses and questions there and quickly uploading them later), can cut your costs substantially. Although everything is technically oriented, BIX offers a variety of interesting "conferences" besides those devoted to the Amiga.

Amiga America
619/364-3816
SYSOP: Chet Solace
Chet's "Final List" of Amiga BBSs is available on the networks, too.

AMIC
707/579-0523
SYSOP: Dave Salas
Dave is the author of the popular Amiga terminal program AMIC.

F.A.U.G.
415/595-2479
First Amiga User Group
Use scripts or macros to dial—a highly popular service.

A Wee Dip: The Well

Many PC Pursuit members and west coast Amigans are fond of accessing The Well, a smaller network with relatively extensive Amiga information and programs on line. Although user information is there, too, The Well is a delightful resource for the more technically minded, as it offers access to USENET. Several methods of one-to-one chat are available, but, like BIX, there is no conference facility for groups.

A New Opening: Portal

Although there's little Amiga-specific information on line as I write this, a relatively new service called Portal is available to PC Pursuit subscribers ($30 per month) through Telenet. Coming in at a flat $10 per month for unlimited access, Portal is a dandy resource for CB communications and electronic mail. The system is not entirely glitch-free, but that may be, we hope, because of its newness. It does, however, offer an internet link via USENET to ARPANET and BITNET. Complete information about Portal is available by connecting with your local Telenet number and typing C PORTAL at the @ prompt.

BULLETIN BOARDS

LEARNING TO MAKE your way around a menu-driven ASCII-based commercial network system can be confusing. One way to get your feet wet without swamping your wallet is to become familiar first with an electronic bulletin board system (BBS) or two. The advantage is that BBSs are similar in design and concept to the networks (except for live conferencing and the volume of things available) and most are freely accessible to anyone with the telephone number. Removing the pressure of paying by the minute makes a big difference in your ability to concentrate on what you are doing so you can get the hang of using menus, shortcuts and downloading. There are hundreds of Amiga "boards" and finding phone numbers for one nearby is usually as easy as asking your Amiga dealer or user group. Lists of boards around the country are popular on line and readily available.

Although there is a possibility that the FCC may heavily surcharge data carriers to the detriment of the entire industry (a highly controversial topic that has prompted thousands of protest letters and telegrams), as I write this you can still access boards in 25 major U.S. cities without incurring long distance charges for $30 a month through PC Pursuit, a Telenet service described in the "Fees and Rates" sidebar. Whether you call locally, long distance or through PC Pursuit, here are some popular Amiga boards to get you started (see box). Some contain lengthy lists of other Amiga BBSs. CompuServe also has a list of Amiga boards.

Get A Modem!

A modem can take you intellectually out into the world where you can find help using your Amiga, download dynamite programs, play games and make friends. Working in tandem with appropriate communications software, the modem (through its hardware capabilities) determines the speed at which you can communicate or travel, so get the fastest one you can. (For a comparative analysis of a number of telecommunications packages for the Amiga, see "Can We Talk?" by Guy Wright and Bob Ryan, p. 37.) 300 baud is fine for live communications but don't even *think* of transferring Amiga programs at that rate. 1200 baud is the standard and 2400 is rapidly gaining acceptance. Any Hayes-compatible modem will work with the Amiga (although you will need a special cable if you have an A1000), and the LEDs and speaker on most models are more than handy. Several 2400-baud modems (which will communicate at slower speeds as well) are available for substantially under $200, including the one I use—Supra's Modem 2400.

Connecting with people changes the flavor of computing for the better—no longer are you stuck off in a room alone. But be forewarned that it can be habit forming. You may need a sudden inheritance to pay for your spiraling connect costs once you get hooked on line. ■

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The Great Communicator

The direct-connect Hayes® compatible 1200 Baud modem for ONLY $99.95

Now that you're able to do all those stand alone applications with your Computer, like word processing, spread sheet analysis, and many others, you are probably thinking "It would sure be nice if I could expand the amount of data I have access to." You are right, everything from Electronic Mail (E-mail) to stock quotes and huge databases of every imaginable type is now on line to the small computer owner. You can even send and receive messages anywhere in the world. All you need is a telephone and a modem which allows your computer to communicate with others through these services.

The next question: "Which modem is best for me?" Let us first say that almost all modems (and services) are set up to communicate in one of three speeds; 300, 1200 and 2400 Baud. If you look around you will find that there is a flood of 300 baud modems on the market being dumped because most computer users prefer 1200 Baud. (1200 Baud is about 4 times as fast which means you spend about ¼ the time and money getting the data you want and more time enjoying it.)



You may also be wondering about getting a 2400 Baud modem. 2400's are great (and quite expensive), only if you have a dedicated, data-grade phone line. Here's why. The regular phone system usually doesn't have the signal clarity and bandwidth to support more than about 1200 baud and as a result, 2400 Baud modems will usually run at either 1200 or, on a real bad line, 300 Baud. They adapt to the worst-case line conditions and will slow transmission accordingly. Why buy a 2400 Baud modem for a lot more money when it's going to transmit at 1200 Baud much of the time anyway? (Kind of like buying a sports car and never letting it go.)

You will also notice a few very cheap 1200s on the market at "too good to be true prices". They are. The usual reason is that they are either not truly Hayes compatible, therefore not usable in all situations and with all services or cheaply built foreign units with poor (or nonexistant) support. The Aprotek Minimodems™ are American built, Hayes compatible and 1200/300 baud. Why not get a modem that will satisfy your present AND future needs by going directly to an Aprotek Minimodem™ especially since we have it on sale?

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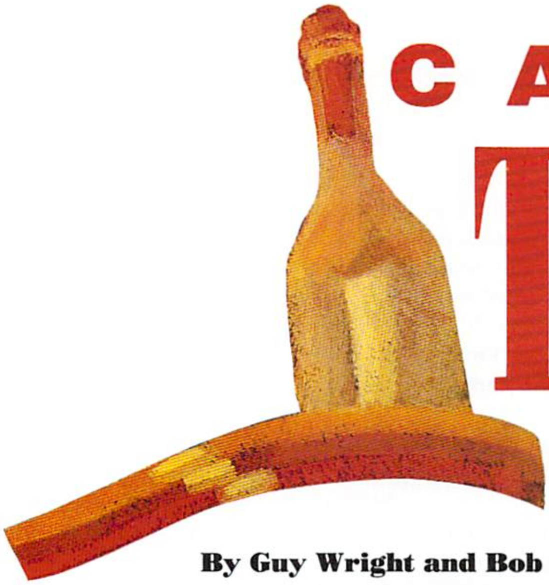
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CAN WE TALK?

By Guy Wright and Bob Ryan

YOUR FRIENDS HAVE regaled you with lists of the free software they downloaded from the networks. Your sister met her boyfriend on a bulletin board service. You want to join in the fun, but are confused by all the telecommunications packages available. After many hours of connect time, we have reached some conclusions about six of the commercial telecommunications programs: Online!, Diga!, MacroModem, A-Talk II, SKEterm and AmigaTerm. The following product snapshots were not designed to be full-blown reviews, but to give you an idea about each program's special features, strengths and weaknesses.

ONLINE!

At over two years old, Online! is the "elder statesman" among Amiga telecommunications packages. Micro Systems Software's current version is a feature-laden package that comes with a thorough, helpful, indexed manual. Online!'s powerful script language lets you automate your telecommunication. You can program ►



An on-line editor-to-editor chat about commercial telecommunications software.

PHOTOGRAPHED BY LARRY DUNN

Online! to log onto a service, download files and leave messages completely unattended. Coupled with multitasking, this is a big timesaver, because Online! can be running automatically in the background while you work on another Amiga project.

> **A-Talk from Oxxi sports dozens of new options and is one of the most powerful telecommunications packages on the market.**

A second advanced feature is Online!'s ability to pass files through translation tables. These tables let you change one or more of the 255 ASCII character codes to any other ASCII code. This is important when you are working with a computer or software that uses different codes or that handle codes differently, such as dedicated typesetting systems. Finally, Online! lets you customize your display with multiple colors, fonts and resolutions. For instance, you can display up to 132 characters on an overscanned screen, specify a borderless window or one without a title bar.

Online! is a proven product that can handle most telecommunications needs. While its wealth of options can be intimidating, you'll find the package hard to outgrow.

DIGA!

Released last year by Aegis Development, Diga! is a very ambitious program. It was designed to be the only telecommunications package you'd ever need—easy for beginners to operate while providing the advanced features experienced users demand. Aegis succeeded in developing a powerful program, but they did not make telecommunications much easier for beginners. To be fair, though, until we see the day when we won't have to worry about things like baud rates, transfer protocols, local echo and transfer buffers, telecommunications will always be confusing to beginners.

In addition to the standard features, Diga! supports a protocol called Doubletalk that lets two Diga!-equipped Amigas chat with one another while simultaneouly transferring files. To automate your on-line sessions, you can define macros, activated by the function keys, and write script files. Diga! also has extensive support for Tektronix graphics emulation and a utility that transfers Tektronix images into Aegis Draw and Draw Plus formats. Diga! also supports a large dialing directory and lets you use your Amiga as a mini-bulletin board system.

Our biggest complaint about Diga! is the manual, which alternates between going into great detail and skimming over features. Also, the index is organized by menus rather than alphabetically, making it difficult to use for reference.

Aegis went for the whole enchilada with Diga!. While they didn't quite get it, they did take a big enough bite to satisfy many feature-hungry telecommunicators.

MACROMODEM 1.2

MacroModem from Kent Engineering & Design is a do-it-yourself package. As the name indicates, this is a heavily macro-oriented program (even the initial set-up sequence is a macro). Besides its own special macro editor, the program has a unique system for commenting each line of a macro with a help string. You can define an unlimited number of macro sets containing 36 macro keys (the Alt-key plus letters and numbers). Each macro holds 35 characters but can call other macro keys for longer command chains. Macro sets can be chained together, as well, providing even more programming flexibility. MarcoModem pushes even further in its programmability quest, offering a shell-like customizable interface called the Command mode; plus you can activate new CLI windows from within the program to execute AmigaDOS commands. If you call the same services continually and would like to customize your sessions, MacroModem is the route to go. For insurance against losing part of a file, MacroModem's file filter, or chop utility, is a separate module that you run on a file only after the download is complete. This might seem like an inconvenience, but would you rather have a filter remove something from a file after you have a copy on disk or before you get it?

A-TALK II

Formerly A-Talk Plus (and before that A-Talk 1.1), A-Talk II from Oxxi sports dozens of new options and is one of the most powerful telecommunications packages on the market. Terminal emulations are A-Talk II's forte. The program supports all the features of the Tektronix display terminals including Alpha, Graph, GIN, Point Plot and Incremental Plot modes. You can store downloaded graphics in IFF format for use with DeluxePaint II (Electronic Arts) and Aegis Draw. With over 40 commands (including keyboard polling, gotos and conditionals), A-Talk II's script language is quite powerful. The manual could be more comprehensive, but it is better than most. A good package with few flaws, A-Talk II is probably the most complete telecommunications program available.

SKETERM 2.01

SKEterm is a workingman's telecommunications package with on-screen help for most features. Everything about SKEterm is fairly easy to use. It has an extensive phone library system that loads macro key ►

Getting Started

TELECOMMUNICATIONS SOFTWARE is the most important link in the telecommunications chain. These programs let you control a modem and place calls to distant computers by entering a number and then directing the modem to dial it. Most telecommunications packages let you store the phone numbers of many different BBSs and services in a phone directory. Some directories save additional information, including the parameters, scripts and macros you use when you access a particular number.

The Basics

Communications *parameters* define the exact nature of the signals sent between two computers over a phone line. The parameters include the baud rate (the number of bits sent per second), how the data is packaged, and some simple parity error checking. The most common parameters used are 300, 1200 and 2400 baud, and eight data bits, one stop bit, and no parity.

Scripts are sequences of prompts and replies that you set up in advance of going on line. Scripts can be as simple as supplying your user name and password to a service or as complex as logging onto a service, downloading stock quotes and logging off. Scripts let you automate your telecommunications sessions. *Macros* let you enter a long string of characters or commands with one keystroke.

Terminal Case

Another feature offered by telecommunications packages is *terminal emulation.* The basic emulation offered is TTY, which insures that your screen reacts as expected to carriage returns, line feeds and form feeds. Other types of terminals have more complex screen formatting features and many software packages let your computer act like one of these dedicated terminals. The most popular terminal emulations offered are DEC (Digital Equipment Corp.) VT 52, DEC VT 100 and ANSI. Increasingly popular are emulators that let your computer act as a Tektronix graphics terminal. Of course, you can only use terminal emulators if the computer you're accessing supports the type of terminal you want to emulate. Specialized terminal emulators are nice, but most people use TTY 100% of the time.

Observing Protocol

Any telecommunications software package should let you exchange files with other computers and to capture data as it arrives across the phone lines. You should be able to capture text at any time you're on line and to send the text to a disk file or to your printer. No special protocol is required to send or receive text information.

Exchanging programs, pictures and music files is a different story. Since these files contain binary information, they can't be captured the way text files can. Downloading binary files from another computer requires the use of *error-checking* protocols. Many different protocols, such as Kermit and XModem, have been developed to help ensure that the data recieved is identical to the data sent. Most protocols send data in chunks along with a value based upon the data in the chunk. If the receiving computer comes up with the same value for the chunk—implying that the chunks are identical—the next chunk gets sent; otherwise, the current chunk is resent.

The important thing about protocols is that the same one must be used on both ends of the telecommunications link. The more protocols your software supports the better.

Chopping Block and ARC

In the earliest days of Amiga telecommunications, BBSs and the on-line services were filled with angry users who found they couldn't run the programs they had downloaded. The problem stemmed from the fact that the header to AmigaDOS program files contains the length of the file. Because transfer protocols send information in chunks of 128, 256 or 512 bytes, they pad the last chunk of a program file with meaningless information if the last chunk isn't exactly 128, 256 or 512 bytes long. When users ran the downloaded programs, AmigaDOS checked the length of the file as it appeared in the header with the actual length. If the two lengths weren't identical—and they weren't when a file had been padded—AmigaDOS would say that the program wasn't an object file and wouldn't run the program.

To get around the problem, utilities were soon developed that would lop padding from the end of a file. Your telecommunications package should have the ability to chop files either while they're being received or after you have them on your disk.

Chopping utilities are not perfect, however, so users and on-line services have come to rely upon a shareware utility called ARC, developed by Raymond Brand, to use in conjunction with protocol file transfers. ARC (for Archive) is a utility that packages programs, text, graphics and other related data files into a single unit. This unit is then made available for downloading. Once you've downloaded this unit, you must use your own copy of ARC (or a subset of ARC called UNARC) to extract the program file, documentation file and any other material from the ARC file. This system gets around the problem of padding because you don't run the ARC file; you run the program only after it has been unARCed. Of course, you need a copy of ARC or UNARC in order to extract files from an ARC file. You can get ARC by sending for a public-domain disk that contains it (Fred Fish #40, for example), by downloading the file ARC.EXE, or by copying it from a friend.

ARC may seem confusing, but it is very simple to use. You'll get the hang of it in no time and never have to worry about chopping again. □

—GW & BR

A Comparison of Telecommunications Software

PRODUCT[1]	Online! 2.01	MacroModem 1.2	A-Talk II[2]	SKEterm 2.01	Diga! 1.0	AmigaTerm
Company	Micro Systems Software Inc.	Kent Engineering & Design	Oxxi Inc.	SKE Software	Aegis Development	Commodore
Price	$69.95	$69.95	$99	$49.95	$79.95	$49.95
Memory Required	512K	256K[3]	512K	256K[3]	512K	256K
Protocols Supported[4]	X, X-CRC, Y, Y-Batch, Z, K, B	X, X-CRC	X, X-CRC (CRC-16 and CRC-32), Y, Y-Batch, Z, K, K-Server	X, X-CRC, X-Windowed, K	X, X-CRC, Y, K, B, Doubletalk[5]	X, B
Baud Rates[6]	300, 600, 1,200, 2,400, 4,800, 9,600, 19,200	112—26,2000	30—31,250	300, 1,200, 2,400, 4,800, 9,600, 19,200, 38,400	300, 1,200, 2,400, 4,800, 9,600, 19,200, MIDI[7]	110, 300, 1,200, 2,400, 4,800, 7,200, 9,600, 19,200
Parities Supported[8]	E, O, N, M, S	E, O, N	E, O, N, M, S	E, O, N, M, S	E, O, N, M, S	E, O, N, M, S
Emulations	TTY, VT52, VT100, VT102, Tektronix-4010	TTY, ANSI, VT52, VT100	TTY, ANSI, VT52, VT100, H19, Tektronix-4010, 4014 and 4014-1	TTY, ANSI, VT100, D-200, ADM-3A	TTY, ANSI, VT52, VT100, Tektronix-4010 and 4014	TTY, ANSI, VT52, VT100
On-Screen Help	No	Yes[9]	Yes	Yes	No	No
Auto-Redial	0—15	Through macros	Selectable	Infinite	Once or infinite through scripts	No
Auto-Answer	Yes[10]	No	Yes[11]	Yes[10]	Yes[11]	No
Capture To Disk	Yes	Yes	Yes	Yes	Yes	No[12]

[1]Chart is based on the latest versions of the software.
[2]Formerly A-Talk Plus marketed by Felsina Software.
[3]Manufacturer suggests 512K for optimum use.
[4]X = Xmodem, Y = Ymodem, Z = Zmodem, K = Kermit, B = Compuserve-B. All packages support straight ASCII, XON/XOFF, 7- and 8-bit word length, half- and full-duplex, some form of CR with LF adjustments, any Hayes compatible modem and most others (but not every modem). None of the packages are copy protected.
[5]Doubletalk is an Aegis protocol that allows two Diga! users to run a chat mode while simultaneously up or downloading another file.
[6]Because a baud rate is supported does not mean you can run a 1,200 baud modem at 9,600 baud or that you can transfer data over a phone line at 262,000 baud. The practical limit for phone line transmission is about 2,400 baud. The higher the baud rate the more errors (and for many on-line services the higher the charges). Straight, direct wire data transfer (using null modems and two computers in the same room) has a higher limit.
[7]The rate at which MIDI compatible musical instruments transfer data, 31,250 bps.
[8]E = even, O = odd, N = none, M = mark, S = space.
[9]MacroModem also supports user-written help and comments in macro files.
[10]Both ONLINE! and SKEterm support auto-answer (with an auto-answer modem) but they are not designed for unattended or remote use.
[11]A-Talk II and Diga! both support limited remote use but are not designed as BBS (bulletin board system) software.
[12]Not continous; saves to disk only after a transfer is complete.
[13]Uses PAR: rather than PRT: so Preferences printer settings are bypassed.
[14]Prints only after a transfer is complete.
[15]Rudimentary editing only.
[16]The ability to compose a complete response in a separate window before it is sent all at once. Handy for CB-style teleconferencing.
[17]Diga! has a different type of chat mode. See footnote 6.
[18]Some packages support different fonts in the additional sense (Ruby, Gar-

sets, script files and such, all of which can be chained for almost unlimited flexibility. SKE Software stresses that most of the effort designing SKEterm went into the terminal emulations. Their VT100 emulation was the first "totally compatible" emulation available for the Amiga, and now they are the first to offer D200 (Data General) terminal emulation with full support of all 60 function keys.

The largest drawback to SKEterm is the disk-based manual. If you want a hardcopy to flip through you can either print it yourself (over 40 pages) or you can order one from SKE for $10. Either way, it is not very well organized and has no index.

SKEterm is a contradiction. It offers more on-screen help than any other package and is simple to get started, but for the more advanced features there is little help, and using some features is hit and miss for a while. While SKEterm does have strengths (for D200 or VT100 emulation, SKEterm is the best of the lot), they are kept hidden.

AmigaTerm

AmigaTerm from Commodore Business Machines is the most limited telecommunications package we looked at, offering the fewest features and the worst manual. Its only unique features are the ability to adjust the tab settings on the screen and the use of sliders for changing the screen colors. Beginners be-

PRODUCT[1]	Online! 2.01	MacroModem 1.2	A-Talk II[2]	SKEterm 2.01	Diga! 1.0	AmigaTerm
Capture To Printer	Yes	Yes	Yes	Yes[13]	No[14]	No[14]
Resize Capture Buffer	Yes	Yes	Yes	No	Yes	No
Scroll Buffer (Up/Down)	Yes	Yes	Yes	Down	Yes	Down
Edit Buffer[15]	Yes	No	Yes	No	No	No
Chat Mode[16]	Yes	Yes	Yes	Yes	No[17]	No
Multiple Fonts[18]	Yes	No	Yes	No	Yes	No
Speech	No	No	Yes	Music	Yes	No
Bell (Sound/Flash)	No	Yes	Yes	Yes	Yes	Yes
Phone Directory	40 + chain	36 + chain	Unlimited	36	Unlimited	No
Macro Keys[19]	20 F-keys (64 chars)	36 keys (35 chars) + chain[20]	30 F-keys (30 chars)	94 keys (96 chars) + chain	50 F-keys (80 chars)	10 F-keys (32 chars)
Scripts[21]	Yes	No[22]	Yes	Yes	Yes	No
Unattended Calling[23]	Yes	Yes[24]	Yes	No	Yes	No
Up/Download Retries[25]	3	Infinite	15	10	10	NA[26]
File Filter[27]	Yes	Yes	Yes	Yes	Yes	No

net, etc.); others only support a few preselected fonts used only for 132-column screens, interlaced modes, etc.

[19]Most packages use the function keys for macro storage, which may cause conflicts with VT-52, VT-100 or VT-102 emulation as these use predefined function keys. In A-Talk II, emulation definitions will be loaded unless you define the function keys. In AmigaTerm, the terminal emulation definitions overwrite user definitions of the function keys.

[20]MacroModem has a predefined set of function key macros, but letter and number keys are programmable. MacroModem is the only package with a built-in macro editor (see footnote 22). These macros can call other macros, even macro sets from disk.

[21]None of the packages that support script files supply an editor to create them. You will have to use a word processor or text editor that can save text as straight ASCII.

[22]MacroModem's macro keys and chaining eliminate the need for scripts.

[23]The ability to program the software to make a call, automatically log-on, check E-mail, download files, etc., while unattended. All of the packages that support this require some fancy script programming.

[24]While this is possible through macros, the company does not recommend it because of the infinite retries on downloads (see footnote 26). If there were a very bad connection, MacroModem would keep trying to get the information until turned off manually.

[25]Some packages will automatically try to up or download files a number of times if an error is detected during transmission. MacroModem will keep trying indefinitely until you manually abort.

[26]Information not available.

[27]Certain protocols such as Xmodem send files in packets of a certain size (128K blocks). If there aren't enough bytes in the last block, then zeros are automatically added to the file. The Amiga won't run a program file if the zeros are present, so some packages have a file filter utility to chop off the zeros automatically. Unfortunately, some IFF pictures within a program file can look like filler to a filter.

ware: Fewer options does not mean less confusion. The condescending manual obscures any clear points and doesn't bother to explain complicated elements of the program. In 20 illustrated pages, the manual tells you about the wonderful world of telecommunications, what a menu bar is, how to use the mouse to select and save your settings, how the buffer works and winds up with file transfer protocol and keyboard remapping. Nowhere does it tell you how to make a call with AmigaTerm. Check the index. You will find no entries for call, dial, numbers, phone, telephone, log-on, bulletin board, BBS, on-line services, uploading or downloading. If you got AmigaTerm free with an Amiga modem, you probably should not open the package. Using AmigaTerm may sour you on telecommunications before you buy a usable program.

The Checkout Line

A-Talk II is the top commercial telecommunications program for the Amiga. Close behind are Diga! and Online!. Each has extensive flexibility and power. MacroModem and SKEterm tied for third only because they're a bit daunting for novices. MacroModem is a natural for people who want to create a custom telecommunications environment without writing a complete program. SKEterm is the "best buy," but the advanced features aren't explained well. AmigaTerm wasn't even in the running. ■

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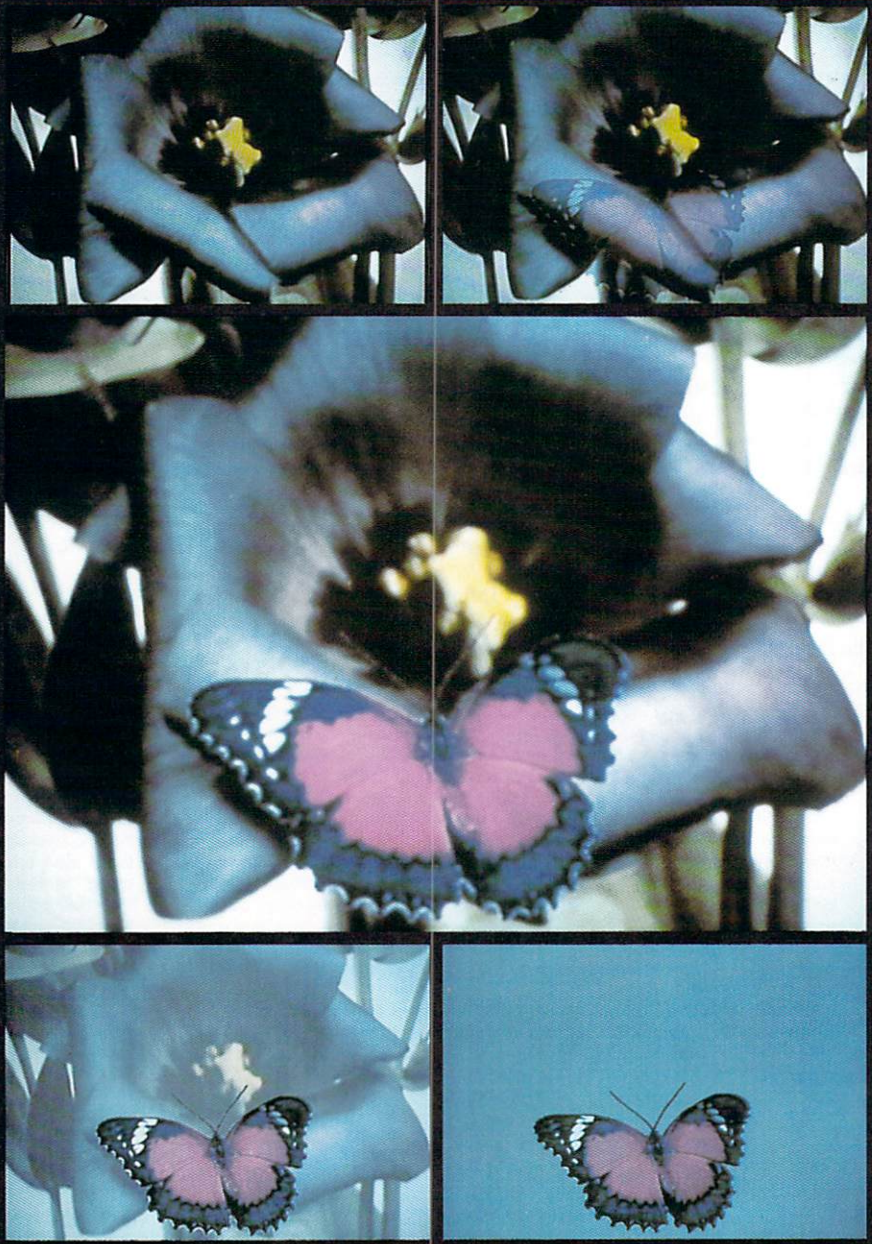
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JUST FIDDLING AROUND: Proportional Gadgets In C

WITH A LITTLE HELP FROM THE AMIGA'S INTUITION, YOU CAN TURN YOUR C PROGRAMS INTO A TWEAKER'S PARADISE OF PROPORTIONAL GADGETS.

By Jim Fiore



TWIDDLING WITH KNOBS and tweaking adjustments should be a national sport. The equipment is plentiful. Any proportional control will do: a TV's volume, an FM receiver, a stereo equalizer's plethora of knobs and sliders, even Amiga software (for example, a word processor's scroll bars, or the omnipresent RGB color controls).

If you're fluent in C and have good Intuition, you can train for the tweaking big leagues by programming your own proportional gadgets to fiddle with. Similar to a standard slide potentiometer (or *pot*, for short), proportional gadgets are used whenever your program needs to collect data from the user as a percentage of some value. A proportional gadget is made of two parts: the knob, which the user moves with his mouse, and the surrounding container. Clicking inside the container (but not on the knob) moves the knob toward the ►

ILLUSTRATED BY CHRIS SPOLLEN

click. Another advantage of Intuition proportional gadgets over their hardware counterparts is their ability to change size. The example drawing program, *SimpleProp.c* (see Listing 1), concentrates on the easiest gadget to manipulate, the slide pot for RGB color adjustments.

STRUCTURED SLIDING

Before you start adjusting your sliders, you must initialize Gadget and PropInfo structures, attach them to a window and monitor the IDCMP (Intuition Direct Communication Message Port). For more information on Intuition and IDCMP, see the March/April '87 *AmigaWorld* for "Fundamentals of C: Playing with Intuition." No matter what type of Intuition gadget you are using (proportional, Boolean, string or integer), you must adhere to the following structure.

```
struct Gadget
{
struct Gadget      *NextGadget;
USHORT             LeftEdge, TopEdge, Width, Height;
USHORT             Flags;
USHORT             Activation;
USHORT             GadgetType;
APTR               GadgetRender;
APTR               GadgetSelect;
struct IntuiText   *GadgetText;
LONG               MutualExclude;
APTR               SpecialInfo;
USHORT             GadgetID;
APTR               UserData;
}
```

NextGadget is a pointer connecting a linked list of Gadget structures. For the final gadget in the series, set the field to NULL. LeftEdge, TopEdge, Width and Height determine the size and location of your gadget's select box, which indicates the gadget's active area. Here you can enter relative offsets or absolute numbers, depending on the Flags variable.

Flags, itself, is rather complex. Once the gadget is selected, you can highlight it with GADGHCOMP, which complements the colors within the select box (the knob, in this case), or GADGHIMAGE, which displays an alternate image. If you would like to key the gadget's size to your window, set GRELBOTTOM (Gadget RELative to BOTTOM), GRELRIGHT, GRELWIDTH or GRELHEIGHT. A gadget's position is normally referenced to the left edge of its window.

If you set GRELRIGHT, for example, the left edge of the gadget will be relative to the right edge of the window. If the window is resized, the gadget always remains on the right side. If you desire special graphics for your gadgets, set GADGIMAGE (as opposed to GADGHIMAGE). For a more lengthy discussion, see the *Intuition Reference Manual*, which describes several other flag types.

To monitor pot movement through IDCMP, you need Activation flags. RELVERIFY produces the IDCMP message type GADGETUP, which, unlike other gadget types, will be received even if you move off of the gadget's knob. (Note how the knob moves even though you vector away from it.) Setting GADGIMMEDIATE provides GADGET DOWN messages.

For a real-time update of the pot value, set the FOLLOWMOUSE flag, which broadcasts IDCMP MOUSEMOVE events to you. You can update mouse location values with each MOUSEMOVE, or by collecting moves and responding to the net move. Because users can generate many MOUSEMOVE events quickly, most programmers prefer to use the net method (as the sample program does).

Specify PROPGADGET for GadgetType. GadgetRender should point to an uninitialized image structure if you are using the default imagery (a rectangle within a larger rectangle), or to an initialized structure if you have a special rendering in mind. If you set a GADGHIMAGE flag, SelectRender must point to your alternate image structure. Without GADGHIMAGE, set it to NULL. If you want a text requester or such, GadgetText should point to an IntuiText structure.

In the example, MutualExclude is not implemented. For SpecialInfo, you must enter a pointer to a PropInfo structure that outlines the slider's movement. GadgetID allows you to distinguish between various gadgets via the IAddress field of the associated IntuiMessage. Finally, UserData contains a pointer to whatever you deem appropriate.

A PROPORTIONAL HEART

The heart of the proportional gadget system is the PropInfo structure.

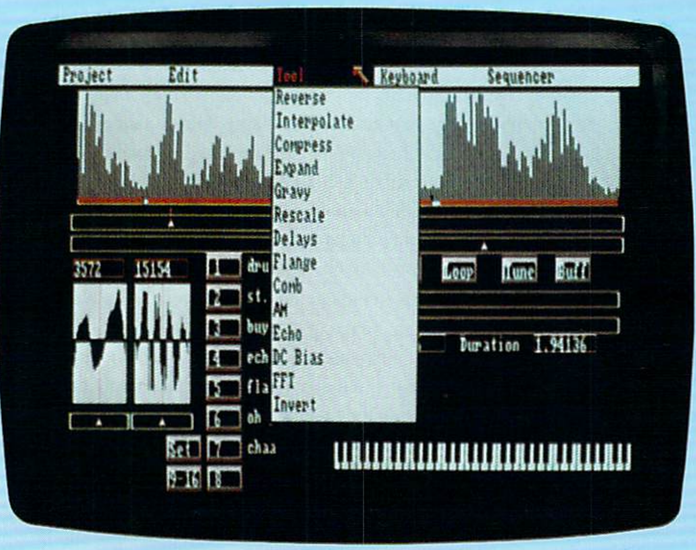
```
struct PropInfo
{
USHORT    Flags;
USHORT    HorizPot, VertPot;
USHORT    HorizBody, VertBody;
USHORT    CWidth, CHeight;
USHORT    HPotRes, VPotRes;
USHORT    LeftBorder, TopBorder;
}
```

You have several choices for Flags. AUTOKNOB gives a simple default image of a rectangular knob inside of a rectangular container. FREEHORIZ and FREEVERT let the knob travel horizontally and vertically. Set both and the knob moves two-dimensionally like the Preferences screen positioning gadget. KNOBHIT is automatically set by Intuition when the knob is clicked on. PROPBORDERLESS eliminates the default rectangular border.

HorizPot and VertPot hold the current pot value and let you determine what the user has entered. Because the value can be anywhere between 0 and 0xffff, some form of scaling usually is required. When scaling, think of the pot value as a percentage with ►

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0xffff as 100%. For a resolution of one part in 50, multiply the pot value by 50 and then divide the result by 0xffff. (When using Integer math, consider that the fractional portion of a value is truncated.)

You can initialize your pot to an arbitrary value, but remember knob movement down or to the right will increase the pot value. To do the opposite (increase volume as the slider rises), subtract your pot value from 0xffff, then scale normally.

HorizBody and VertBody represent the percentage showing (out of 0xffff) of the gadget you are accessing. When you use AUTOKNOB, the percentage is reflected by the size of the knob. If you are scanning a directory with 20 names, and five are visible at any given time, the knob will be ¼ the size of the container.

The pot value indicates whether you are at the beginning, middle or end of the directory. Clicking the mouse on either side of the knob moves it a distance equal to the knob's size. This proportional movement occurs even if you are not using AUTOKNOB. In the example program, an alternate image is used with a body size larger than the image itself, producing large jumps. Intuition sets and maintains all of the remaining variables in the structure.

THE PROOF IS IN THE PAINTING

The example program, *SimpleProp.c*, is a very simple paint program with a gadget window and a drawing window. By holding the left button, you can sketch freehand with the mouse in the draw window. Set the color of your drawing pen with the gadget window's three horizontal sliders, one each for red, green and blue.

The red slider uses a stock AUTOKNOB gadget, while the green slider is BORDERLESS. Its knob is automatically a little larger, because it does not need to compensate for a border. The blue slider uses special imagery for both selected and unselected knobs. Note how blue's body is ¼ of the slider even though the image is considerably less. The upper left corner of the gadget window houses four numbers, indicating which of the three gadgets is presently active and the red, green and blue values (zero to 15) of the drawing pen, respectively. For sake of example only, an inactive relative AUTOKNOB gadget is positioned in the right window border. Notice that its body is ⅓ of the slider no matter how you size the window.

As a paint program, *SimpleProp.c* leaves a lot to be desired. Menus, requesters and the like were left out to decrease clutter, and the "Okay to draw" flag is oversimplified. (Make sure that you reactivate the draw window by clicking on the depth arranger or title bar, otherwise you will get an extraneous line.) Exit the program by clicking on the draw window's close gadget.

As a programming exercise, *SimpleProp.c* offers ample room to experiment and tweak gadgets. (Remember: If you have an expanded machine, all image data must be in the lower 512K of memory, otherwise the blue slider will be rendered without a knob.) For starters, try repositioning the sliders and altering their sizes. One convenient thing about Intuition is that you can resize your window, destroying the gadget imagery, without the program crashing. Sliders will still produce correct values when moved. If they are moved, resizing the window will refresh the gadgets. You could change the orientation of the sliders or make them two-dimensional. Changing pot and body values is also a useful warmup exercise. With a little practice, you'll be ready for the major leagues of tweaking. ■

Jim Fiore is an Assistant Professor in the Electronics Department of Mohawk Valley Community College. Write to him at 730 Dawes Ave., Utica, NY 13502.

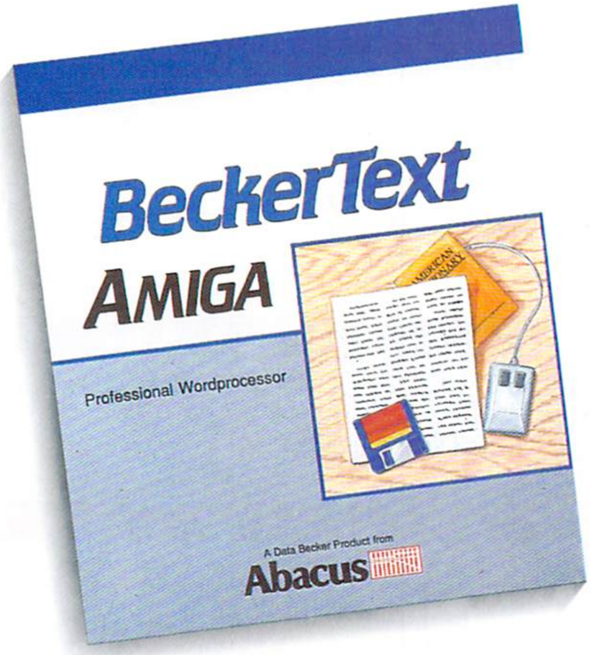
Listing 1. SimpleProp.c

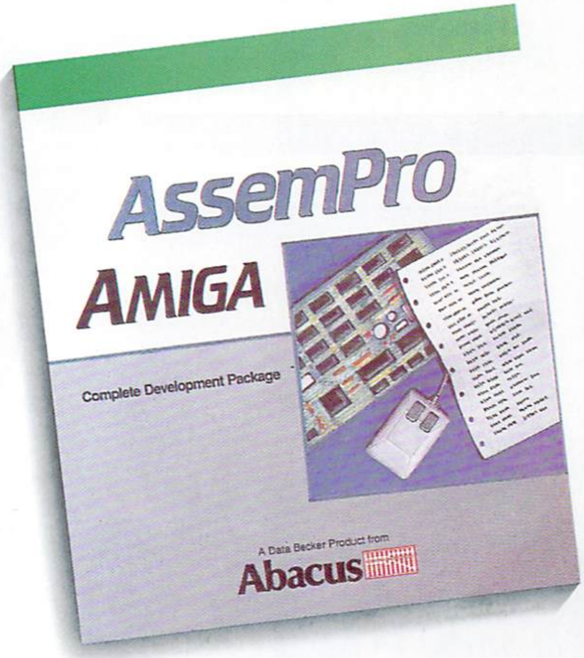
```
/*   SimpleProp.c by Jim Fiore, dissidents.
Compiled and linked under 1.2 using Manx Aztec C V3.4
     cc +L SimpleProp.c
     ln +Cdb SimpleProp.o -lc32
32 bit ints used. (+L and c32 for Manx)
Manx requires '\' for line continuation. Latttice
users can ignore '\'. Image data must reside in chip
memory. (+Cdb for Manx) */
#include "functions.h"
#include "intuition/intuition.h"
/*-------------defines-------------------------*/
#define INTUITION_REV  33L
#define GRAPHICS_REV   33L
#define TOTAL          4
/*-------------Globals-------------------------*/
struct IntuitionBase *IntuitionBase;
struct Window        *d_window, *g_window;
struct Screen        *my_screen;
struct RastPort      *d_rast, *g_rast;
struct GfxBase       *GfxBase;
struct ViewPort      *d_v_port;
struct IntuiMessage  *message;
struct Gadget        gadget[TOTAL];
struct Image         image[TOTAL+1];
struct IntuiText     itxt[TOTAL];
struct PropInfo      prop[TOTAL];
USHORT               gadg_id;
int                  mouse_moved;
                    /* image data 48 x 6 x 1 */
static USHORT idat[]={0xffff, 0x0000, 0xffff,\
                      0xffff, 0x0000, 0xffff,\
 /* initial knob */   0x0000, 0xffff, 0x0000,\
                      0x0000, 0xffff, 0x0000,\
                      0xffff, 0x0000, 0xffff,\
                      0xffff, 0x0000, 0xffff};
static USHORT idat2[]={0x0000, 0xffff, 0x0000,\
                       0x0000, 0xffff, 0x0000,\
 /* alternate knob */  0xffff, 0x0000, 0xffff,\
                       0xffff, 0x0000, 0xffff,\
                       0x0000, 0xffff, 0x0000,\
                       0x0000, 0xffff, 0x0000};
/*--------function declarations-----------------*/
VOID
open_all(), damp_mop(), create_gadget(),\
create_prop(), create_itxt(),\
create_image(), handle_messages(),\
handle_g_window(), handle_d_window(), \
update_prop();
struct Window       *create_window();
struct Screen       *create_screen();
/*-----------start of main()--------------------*/
```

Listing continued on p. 90

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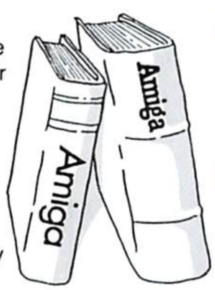
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THE "PRETENDER" HERE IS A DIFFERENT KIND OF "PLATTER"—A VIRTUAL MS-DOS DISK ON YOUR A2000'S HARD DISK TO LET YOU RUN IBM PC SOFTWARE ON THE A2088 BRIDGEBOARD MORE EFFECTIVELY.

BY TIMOTHY TRIMBALL

Using an IBM PC without a hard disk would have been like taking your snarling, souped-up '57 Chevy out once a week to drive three blocks to Burger Haven. You've got the horsepower, so why not use it? The same is true of using an Amiga 2000/Commodore A2088 Bridgeboard system with only a 5¼-inch floppy drive; developers of most of the powerful PC software recommend or require you use a hard drive. You could spend $400 for a hard disk on a card and install it in the IBM compatible data bus, or you could save your $400 and conjure up a virtual disk from a hard drive on the A2000. Basically a fake drive, a virtual disk is a file on the Amiga's hard disk that appears to be a real disk drive to you and, more importantly, the Bridgeboard. All you'll need for this sleight of storage is a little knowledge of IBM/MS-DOS, the A2000's MS-DOS disk and a blank 5¼-inch disk.

An IBM PC/XT on a card, the A2088 is a peripheral board that resides in one of the "bridge" slots of the A2000. The Bridgeboard spans the operating system gap with one connector in the Amiga bus and one connector in the PC bus, letting you run IBM software from an internally mounted 5¼-inch floppy drive in your Amiga. For a detailed performance analysis, see "Bridge Over Troubled Waters" in the February '88 isssue of *AmigaWorld*, p. 20.

NOTHING UP MY BOOT

Access the Bridgeboard by opening the PC drawer on your hard disk or the 3½-inch disk labeled 2088 Software for PC Bridgeboard. In the PC Window you will see five icons—PC Mono, PC Color, PCDisk, LPT1 and PCPrefs. PC Mono is for using the your monitor in monochrome, while PC Color lets you use an IBM color display. PCDisk allows you to use the Amiga hard disk from the Bridgeboard and transfer files between the Amiga and Brigeboard. LPT1 accesses the Amiga printer port from the Bridgeboard; PCPrefs is for setting your Bridgeboard preferences. You should always double click the PCDisk icon before actually accessing the DOS disk. After loading PCDisk, click the PC Mono for a full screen window to the MS-DOS environment. After the copyright notices appear, enter the correct date and time or return through the requests, until you reach the DOS prompt, A>. The A: indicates you are using drive A, the 5¼ floppy drive.

Now, you must format and populate a new disk for booting up the Bridgeboard and virtual drive. At the DOS prompt type: FORMAT A:/S and press

Return. The /S tells DOS to copy the boot programs to the floppy also. When told, put the disk to be formatted into drive A: and press any key. When finished, DOS will ask if you want to format another disk. Just press N and Return to say no.

While your new disk will boot DOS on the Bridgeboard, it is still missing the programs needed to use the Amiga hard disk, Jdisk.SYS and Jlink.EXE. To put these on your boot disk, insert the 5¼-inch Bridgeboard Utilities disk into drive A: and type COPY JDISK.SYS B:. As copying progresses, swap the Bridgeboard Utilities disk and the boot disk when you are told. (DOS fakes the Bridgeboard into thinking that you have two drives, A: and B:, when in fact they are both the same drive.) Repeat the procedure to copy Jlink.EXE.

Jdisk.SYS is a Device Driver, a program that attaches to DOS in memory and tells DOS how to communicate with the virtual disk. Without it in memory, DOS would not know how to let you use the Amiga hard disk as a virtual drive. To load Jdisk.SYS into memory you must create a configuration file, Config.SYS, that includes the statement DEVICE = JDISK.SYS. With your new boot disk in drive A:, type:

```
COPY CON:CONFIG.SYS
DEVICE = JDISK.SYS
FILES = 20
BUFFERS = 15
```

Press the F6 function key to save your keystrokes. If you make a mistake, simply press F6 and retype the file. Reboot the Amiga with your new disk and follow the same path to access the Bridgeboard and DOS. When you arrive at the A> prompt, you're ready to create your virtual disk.

ABRACADABRA . . . DISK!

Jlink.EXE materializes your virtual disk out of existing storage space by putting a file in the root directory of the Amiga's hard disk. Determine the virtual disk's name and size, and type: JLINK C: HD0:VDISK /C:1000. In this case, the file is called Vdisk, has a size of 10MB (half the Amiga hard disk) and links as drive C:. If you have any problems, refer to the Bridgeboard User's Guide, Appendix C. The manual also recommends that you create a partition on the hard disk first and create your virtual disk in the secondary partition to prevent accidental erasure of the virtual disk file from the Amiga hard disk. If you are willing to go to the effort of building a partition, it is a safer construction. However, if you're careful about not deleting the Vdisk file from the hard disk or try not to move it anywhere else on the disk, then you shouldn't have any problems.

Every time that you want to use the virtual disk, you must tell DOS to link to the file on the Amiga hard drive. A shortcut is to enter a batch file (Autoexec.bat) to do it for you. With your boot disk in drive A: type:

```
COPY CON:AUTOEXEC.BAT
JLINK C: HD):VDISK
C:
DATE
```

Press the F6 key to save the file. Autoexec.BAT is similar to the Amiga's Startup-Sequence; when the Bridgeboard boots, the Autoexec.BAT file executes. Putting the Jlink command in this batch file automatically links the Bridgeboard and DOS to the Vdisk file, drive C:, each time you boot your machine.

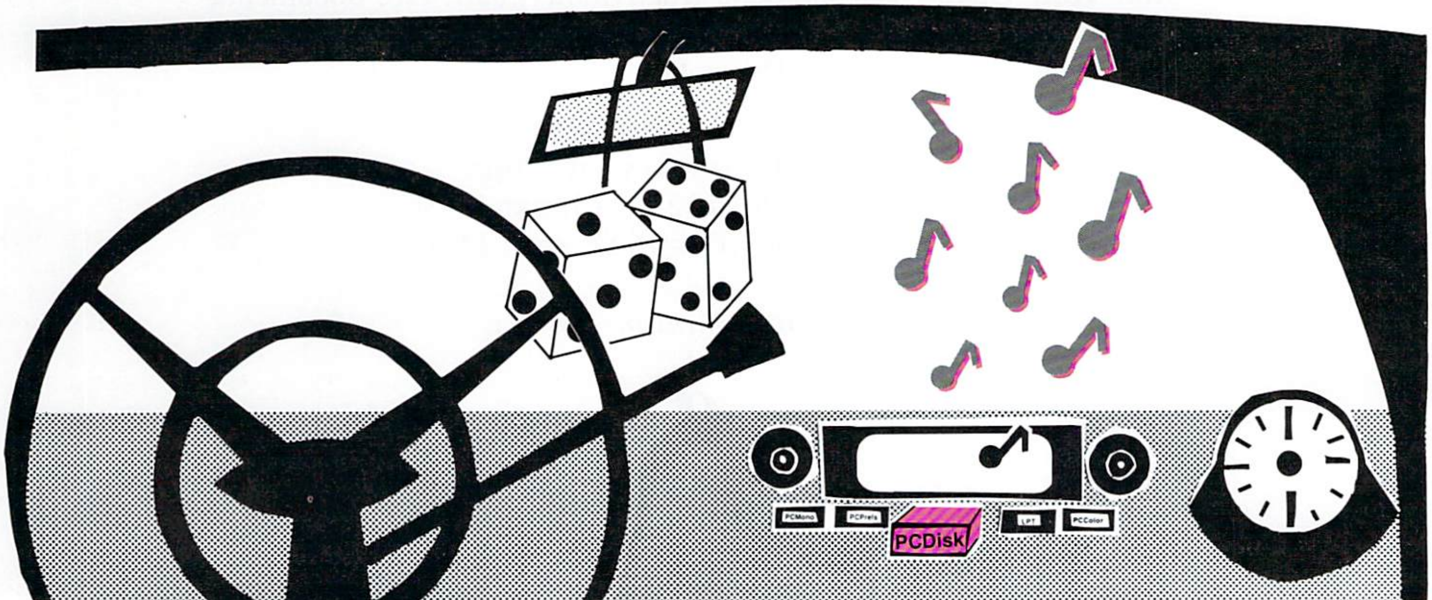
When you're finished with your virtual disk, you should unlink it. As long as Vdisk is linked, it is an open file on the Amiga hard disk. If you turn off the computer or reboot with Vdisk open, the file will be corrupted and unusable. Again, a batch file will save you time and trouble. At the DOS prompt, type:

```
COPY CON:UNLINK.BAT
JLINK C: HD0:VDISK /U
```

F6 saves your file. When you conclude a work session with your virtual disk, simply type UNLINK.

With your virtual disk and all its companion files completed, you are ready to fill it with IBM compatible software. Remember, you have DOS and the Bridgeboard thoroughly fooled; as far as they are concerned, Vdisk is a real, physical hard disk. To the Amiga, it's just a phantom of the operating system, and can be deleted from the hard disk while in AmigaDOS, so be careful and always unlink the file when you're finished working. ■

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ILLUSTRATED BY JAN MULLER

FROM HERE TO HERE AGAIN: RECURSION IN BASIC

By Donald R. Horner, Ph.D.



THIS SENTENCE IS the first sentence in this article about recursion in BASIC (for details, see sentence three). Understand? If so, you have read enough of this paragraph and may go on to the next; otherwise, read on. If you are reading this third sentence (referenced by the first sentence), you need to reread this paragraph from the top: Please do so.

If you ever make it to this paragraph (which is paragraph two), congratulations; you have just escaped from the befuddlement of recursion. Recursion is a case of the dog chasing its own tail; it is an instance where something refers to itself (or refers to itself referring to itself, or. . . oh, never mind). In programming it is the act of a routine calling itself and is often a useful device. This article deals with the use of recursion in BASIC programs.

Some Kind of Loop

Recursion in BASIC may be *direct* as in:

```
1000 GOSUB 1000:RETURN
```

or *indirect*, as in:

```
1000 GOSUB 2000:RETURN
2000 GOSUB 1000:RETURN
```

In the latter case, the first subroutine calls the second, which then calls the first; effectively, the first ►

Sometimes it's useful to send your BASIC program off to where it already is. Just don't get caught in the loop.

ILLUSTRATED BY KIM WILSON EVERSZ

subroutine called itself. These examples, though trivial, make it clear that recursion is really a *looping* technique. They often look like infinite loops, but in fact behave quite differently from the following truly infinite loops:

```
1000 GOTO 1000
```

and

```
1000 GOTO 2000
2000 GOTO 1000
```

Whereas GOSUB loops will cause program termination with an Out of Memory error message, each GOTO loop will cause the machine to run until it is interrupted. Of course, most useful loops will have a nonerror exit or terminal condition.

Why do the earlier loops cause an out of error message? For each subroutine call (GOSUB), BASIC places certain information (such as the address of the next instruction after the GOSUB) in a memory segment. The purpose is to know where to transfer control and what to do upon encountering a RETURN. Both of our GOSUB loops execute repeated GOSUB statements without ever executing a RETURN. Therefore, they repeatedly place information on the stack until allocated memory is exhausted. Try it.

A Recursive Example

Using recursion for stripping leading blanks from a string is easy. One simple solution might be stated:

If s$ has a leading blank, strip it
off and repeat this instruction.
Otherwise, quit.

Like all good recursive routines, this one has three parts: 1) an exit or terminal condition (no leading blank); 2) a general condition requiring a recursive call (one or more leading blanks); 3) a process for moving the general condition closer to the terminal state (strip a blank). Listing 1 illustrates this.

The recursive routine is located at the label *strip*. The driver portion (main or calling program if you prefer) creates s$ with three leading blanks. That string is printed out and the call to *strip* is made. Let's track the action:

CALL #1: remove the leading blank from s$ and call strip. Return will be to main.
CALL #2: s$ still has a leading blank—remove it and call strip.
CALL #3: s$ still has a leading blank—remove it and call strip.
CALL #4: s$ has no leading blank—return to Call #3.
Call #3 is complete—return to Call #2.
Call #2 is complete—return to Call #1.
Call #1 is complete—return to main.

Print the new s$.

You might increase the size of x% just to see where your machine will run out of memory. I had the earliest failure at x% = 122 using a 512K machine and default system allocations. At that point, too many return addresses (and other information) had been stored on the stack by the nested subroutine calls.

Recursive routines often resemble infinite loops, but they behave quite differently.

A Second Example

The act of creating powers of positive numbers gives another chance to show recursive thinking. We will restrict the problem to powers that are whole numbers (non-negative integers). The idea goes something like this:

IF THE exponent e is 0 then b^e = 1 while if e is 1, b^e = b (terminal states).
OTHERWISE, cut e in half and reapply this whole process.
WHEN FINISHED, calculate b^e by squaring the returned value if e is even or squaring the returned value and multiplying by b if e is odd.

Listing 2 shows this routine to be a little more complicated. A major difference from the earlier program is that there is some calculation to be performed after returning from a recursive call. In Listing 1, the only thing to do after returning from a recursive call was to RETURN.

The main routine in Listing 2 starts us with b = 2 and e% = 5. The answer b^e = 32 will be returned as r. Let's track the recursive calls, starting with the main program's call to *power*.

CALL #1: e% = 5 is neither 0 nor 1 and e% MOD 2 = 1. Thus, reset e% = 5\2 = 2 and call power. When we return, the calculation will be r*r*b.
CALL #2: e% = 2 is neither 0 nor 1 and e MOD 2 = 0. Reset e% = 2\2 = 1 and call power. Upon return, the calculation will be r*r.
CALL #3: e% = 1 so set r = b = 2. This call is complete—return to Call # 2.
To complete Call #2, calculate r = r*r = 2*2 = 4.
Return to Call #1.
To complete Call #1, calculate
r = r*r*b = 4*4*2 = 32. Return to main.
Print the value of r, which is 2^5 = 32.

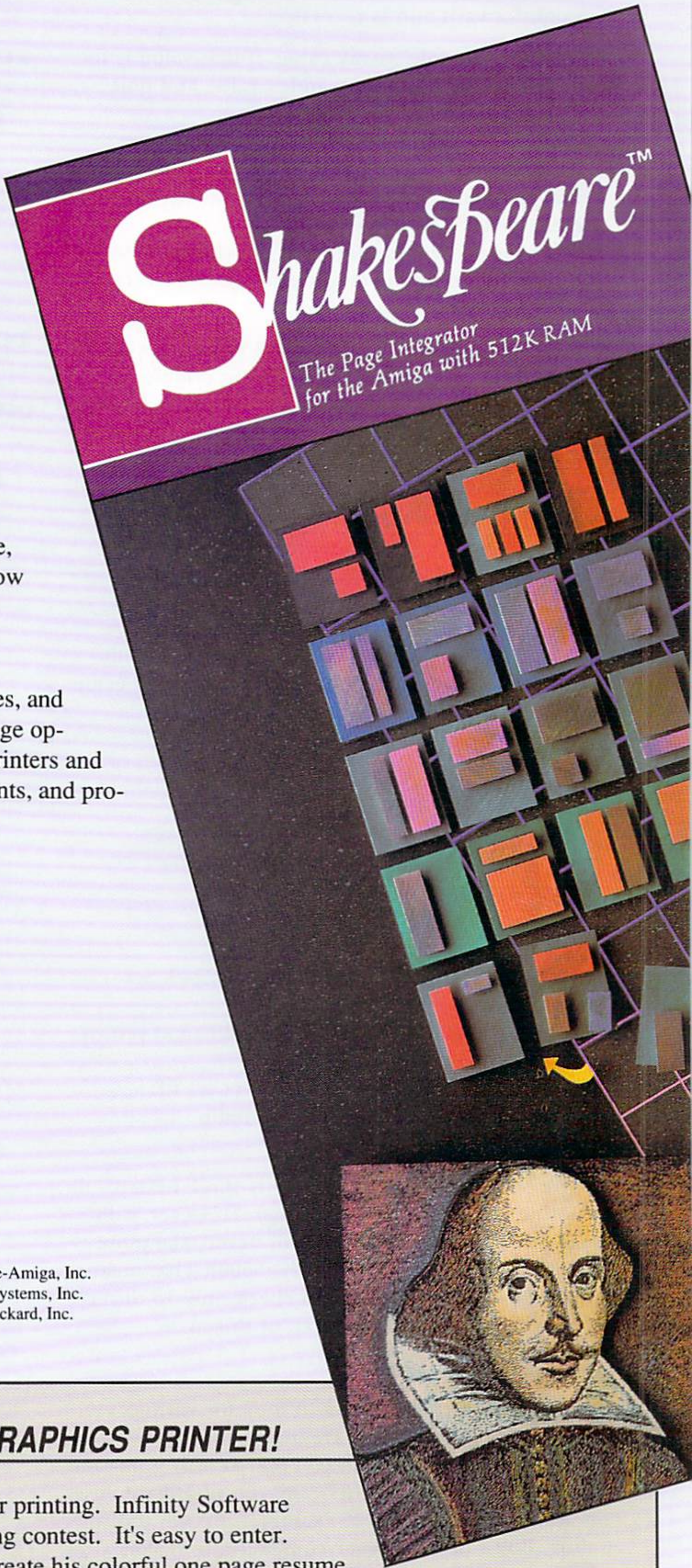
A Binary Search

Suppose you have an array of values stored in increasing order. That is, the second entry is larger than the first, the third is larger than the second and so on: Each entry exceeds the one before it. You wish to search the array, looking for a specific value.

Of course, you could start at the first array entry and check all entries sequentially until you either find the value being sought or you encounter an array entry larger than the target value (i.e., the target value is not in the array—you have gone beyond where the target value should be). Binary searching is a nice alternative. ►

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The idea behind binary searching is pretty straightforward and is recursive:

CHECK the "middle" array value. If that value is the one being sought, note its index value and quit (terminal state).
OTHERWISE, determine whether the value being sought should be in the left half of the array (smaller indexes) or in the right half (larger indexes) (general condition).
APPLY this process to that "half" of the array suspected of holding the target value (move closer to a terminal state).

The main program in Listing 3 establishes an array of 5,500 values, each value being double its index. The recursive binary search routine is located at the label *search*. The values passed to *search* are the starting index lo% = 1, the ending index hi% = 5500 (we will look through the entire array) and the target value x = 3374. Since 3374 is the value of array (1687), the returned and printed value of result% should be 1687. Let's trace the action in search and be sure.

Before beginning, note the first line of *search*. That line gives a second terminal condition—the ability to quit when you know that the target value is not in the array.

CALL #1: x = 3374, lo% = 1<hi% = 5500. Set mid% = 2250.
x<array(2250) so set hi% = 2249.
Call search.
CALL #2: x = 3374, lo% = 1, hi% = 2249. Set mid% = 1125.
x>array(1125) so set lo% = 1126.
Call search.
CALL #3: x = 3374, lo% = 1126, hi% = 2249. Set mid% = 1687.
x = array(1687) so set result% = 1687 and return to Call #2.
CALL #2 is complete—return to Call #1.
Call #1 is complete—return to main.
Print result% (i.e.,1687).

We found our answer with only three nested subroutine calls; it could take longer. However, with 5,500 entries in the array it will never take more than 13 nested calls (2^13 = 8K>5500)! That means that at worst, we will have to check only 13 different array values in any search of this array.

TRUE CONFESSIONS

You can alter the program to look for various values of x, some of which are not in the array. Altering lo% and hi% will let you search only a portion of the array. Try lo%>hi% and see what happens.

I have to admit: These examples are not too startling. But, I have a bigger confession to make: These examples avoid the real problem with writing recursive programs in BASIC . . . the problem of *local variables*.

If you feel adventurous, find some recursive Pascal routines and convert them to BASIC.

Variables local to a subroutine are variables whose values are alterable only within the subroutine itself. BASIC subroutines normally do not have local variables. Fundamentally, any variable mentioned anywhere in a BASIC program (except in an Amiga Basic subprogram) is accessible by any other line of code in that program. This is not true for languages designed for block structuring and recursion (e.g., Pascal). For such languages, the values of local variables are saved on the stack (along with return addresses, etc.) during a recursive call. When control returns, the original values of local variables are restored. To write recursive programs in BASIC it is entirely possible that the programmer will have to create and manage stacks to save variable values during recursive subroutine calls. One final example serves to illustrate the point.

WORD JUMBLES

You know those annoying scrambled word puzzles in the newspaper that drive you berserk because you can't find all the answers? Well, the problem lies in the difficulty of thinking recursively, for finding all the scrambled variations for a word is a recursive process. Consider this approach to solving the problem:

IF THE WORD has only one letter, it is already scrambled.
OTHERWISE, remove the first letter.
Repeat this routine for the shorter word.
Upon returning, replace the removed first letter in each possible position for each word returned.

To illustrate the last instruction, suppose the removed letter is t and the returned words were oy and yo. The combinations generated, then, are toy, oty and oyt for oy, and tyo, yto and yot for yo. Note that the number of words made from each returned word is one greater than the length of the returned word. A first try at *scramble* might look like this:

```
scramble:
IF LEN(word$) = 1 THEN
    RETURN
ELSE
    L$ = LEFT$(word$,1)
    word$ = MID$(word$,2)
    GOSUB scramble
```

However, a recursive call to *scramble* will generally rewrite L$, causing us to lose the letter just stripped off. We need that letter eventually, so it must be saved. Listing 4 gives one solution using a stack to retain those important letters.

The main program is set up to handle words of up to six letters without running out of system-allocated memory. In this case, it is not recursion that uses so much memory; it is the array ans$( ) that holds all the resulting combinations. For a word of length k, there will be k! such combinations (k! is the product of the integers from 1 through k). ►

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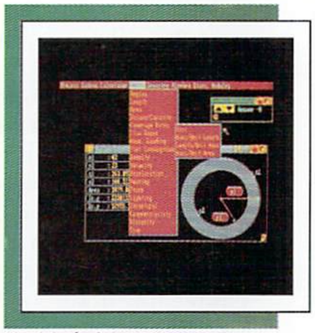
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The recursive routine begins at the label *scramble.* The exit condition causes a single letter to be placed in ans$( ) and indicates that only one word is being returned in the array. The general case strips the first letter from word$ and pushes it onto the stack L$( ), updating the pointer top: top points to the next available place to push a value onto the stack. The recursive call follows.

Upon returning from the recursive call, top is decremented so that we can recall the "letter-to-be-remembered" from the stack. The value p counts how many new words will be made from each returned word. The calculation for k simply finds the location in ans$( ) for each returned word while m finds the location into which each newly formed word will be placed. As a matter of fact, it is this placement of words within ans$( ) that provides most of the complexity of the algorithm.

The placement of each word must be predictable and easily calculated, but must be done in such a way that a returned word is never overwritten before it is captured in temp$. Why all the bother? Because using two or more arrays is too costly memory-wise. (INT(total/nextcnt) just spreads the new words evenly throughout that part of ans$( ) that will be filled. (p*(i – 1) + j) + 1 increments the value of m by INT(total/nextcnt) whenever either i or j increases.)

Trace out the execution of the program in a manner similar to that above. The activity in ans$() will look like:

ans$(1) = "y"
ans$(1) = "oy" ans$(4) = "yo"
ans$(1) = "toy" ans$(2) = "oty" ans$(3) = "oyt"
ans$(4) = "tyo" ans$(5) = "yto" ans$(6) = "yot"

SUGGESTED PROBLEMS

If you want to experiment with recursion in BASIC, try these:

FIND the largest (or smallest) number in an array: If the array has one element, it is the largest. Otherwise, split the array in two halves and repeat this process on the "left" half and then on the "right" half. Select the larger of the two returned values.

SORT the numbers in an array into increasing (or decreasing) order: If the array has only one value, it is sorted. Otherwise, split the array into two halves and repeat this process for the left half and then for the right half. Merge the two halves.

Both techniques will require some mechanism for remembering one or more local variable values when making recursive calls. Observe that each routine calls itself twice rather than once. These problems, although not terribly difficult, are not necessarily elementary.

If you feel adventurous, find some recursive Pascal routines and convert them to BASIC. A word of caution, however: Do not try to use Amiga Basic's subprogram facility; it, unfortunately, will not allow the recursive call. The AC/BASIC compiler, however, does allow recursive subprogram calls.

SUMMARY OF THE SUMMARY

Because BASIC is not designed (with local variables) to support recursion, extra work may be needed to make a go of it. Sometimes, though, it is worth the effort. Recursion is a beautiful way to think about some problems—the Towers of Hanoi being one well-known example. Recursion, however, does use overhead memory to manage the system stack. And because of the subroutine calls that must take place, recursive programs may also be slow.

So (you ask) why use it? Well, sometimes a problem just "smells" of recursion. However, generally, if the program is to be very efficient, it can be altered to use some other forms of looping, i.e., the GOSUBs will be replaced. Recursion can always be avoided, but this is sometimes quite difficult and demands a careful look at how to approach certain problems. (And that sounds like the subject of another article, doesn't it?)

This sentence is the last sentence in this article on recursion in BASIC and is itself recursive; please return to paragraph one. ■

Dr. Horner teaches computer science at Eastern Washington University. Write to him at Route 2, Box 54, Cheney, WA 99004.

Listing 1.

```
x%=3
s$=SPACE$(x%)+"this string"
PRINT s$:GOSUB strip:PRINT s$
END

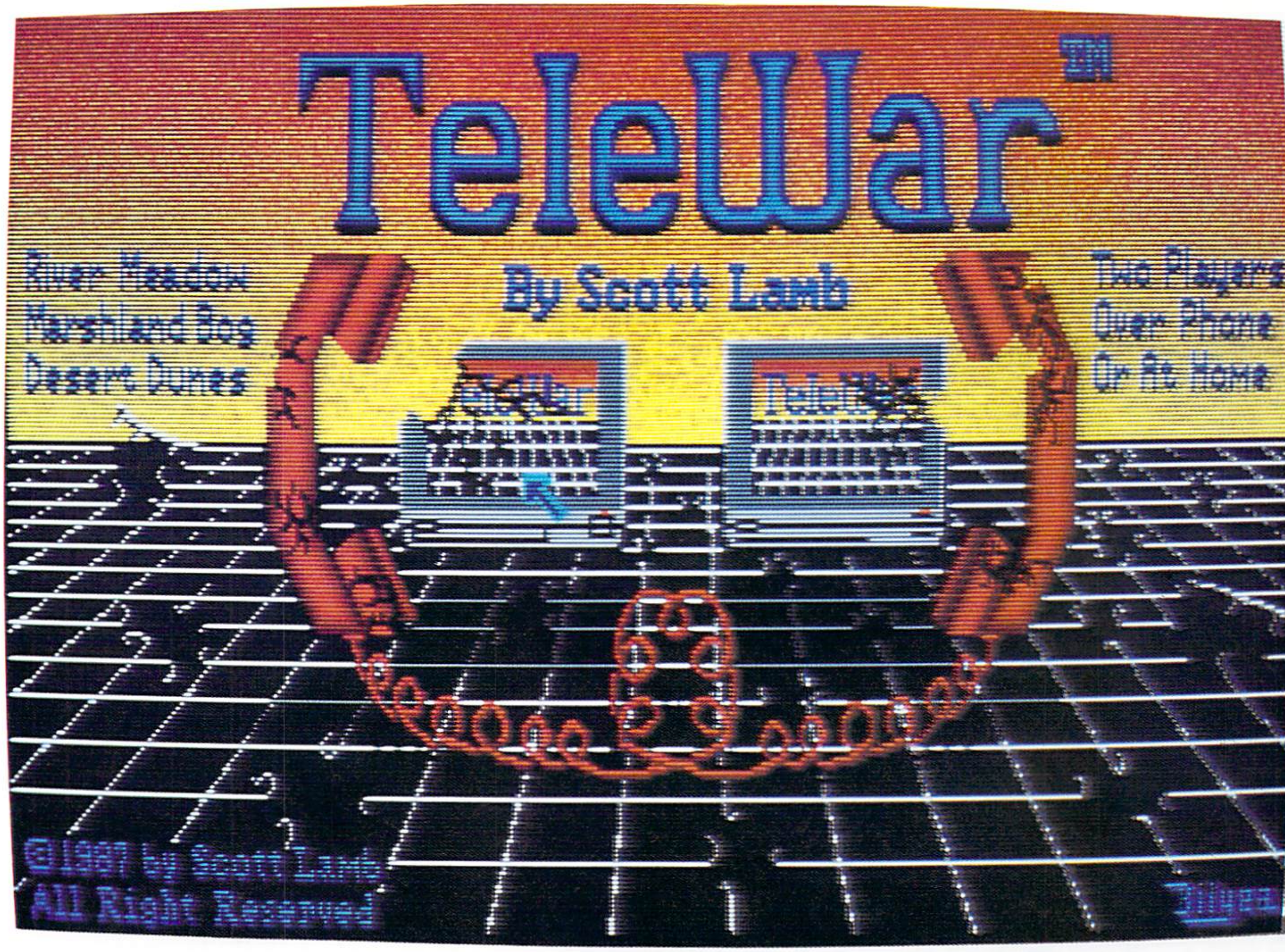
strip:
  IF LEFT$(s$,1)=" " THEN      'If left char is blank
    s$=MID$(s$,2)              'strip leftmost char
    GOSUB strip                'and continue recursion.
  END IF
RETURN                         'Otherwise return.
```

Listing 2.

```
b=2
e%=5
GOSUB power:PRINT r
END

power:
  IF e%=0 THEN               'Calculate result
    r=1                      'and return in either
  ELSEIF e%=1 THEN           'terminal case.
    r=b                      'For any other case:
  ELSEIF e% MOD 2 = 0 THEN    'If even power, continue
```

Listing continued on p. 60



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```
                          'recursion
  e%=e%\2:GOSUB power  'after cutting power in half.
     r=r*r          'Upon returning, calculate result.
  ELSE            'Or, if odd power, continue recursion
     e%=e%\2:GOSUB power     'after cutting power in
                          '"half."
     r=r*r*b       'Upon returning, calculate result,
  END IF
RETURN             'and return.
```

Listing 3.

```
DIM array(5500)
FOR i=1 TO 5500:array(i)=2*i:NEXT i
x=3374:lo%=1:hi%=5500
GOSUB search:PRINT result%
END

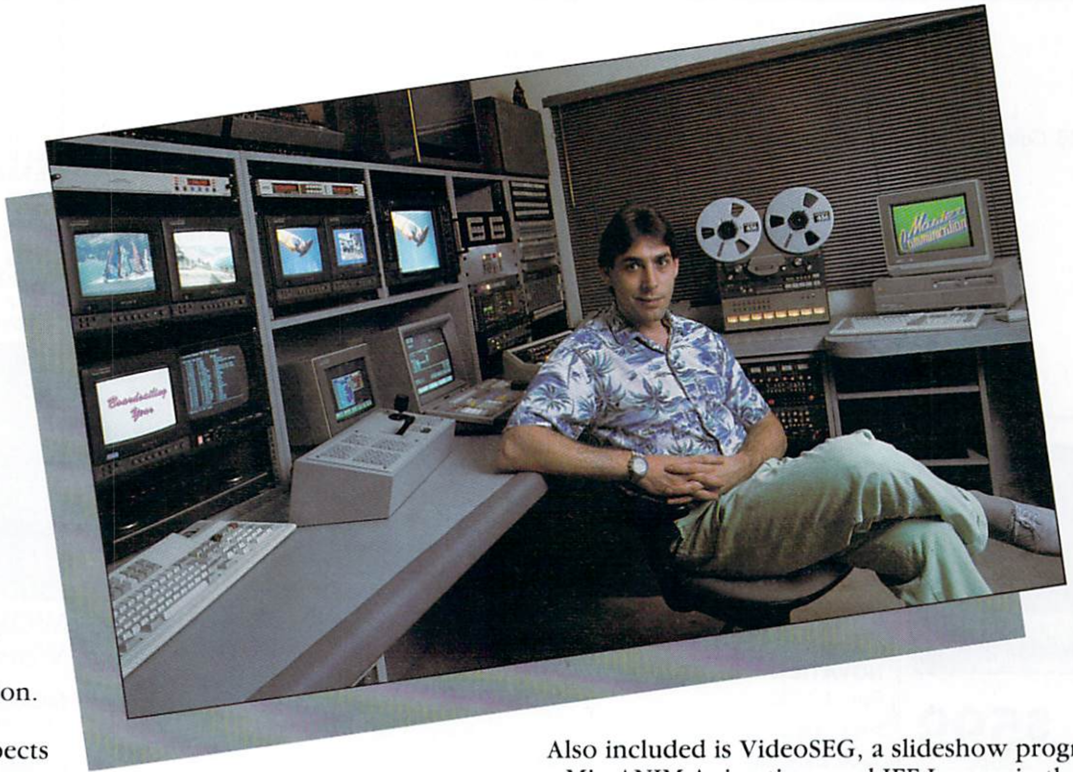
search:
  IF lo%>hi% THEN                'Two terminal states:
     PRINT "value not found"     'stop - error
  ELSE
     mid%=(lo%+hi%)\2            'and
     IF x=array(mid%) THEN
        result%=mid%               'stop - value found.
     ELSEIF x<array(mid%) THEN      'Otherwise
        hi%=mid%-1                  'continue recursion
        GOSUB search             'with lower half array
     ELSE                        'or
        lo%=mid%+1               'continue recursion
        GOSUB search             'with upper half array.
     END IF
  END IF
RETURN                           'Return.
```

Listing 4.

```
n=720
DIM ans$(n)
top=1
  'Initialize up to six-letter words
word$="toy"
total=1
FOR i=2 TO LEN(word$)
  total=total*i
NEXT i
  'number of scrambles
GOSUB scramble
FOR i=1 TO total
  PRINT ans$(i)
NEXT i
END
scramble:
  IF LEN(word$)=1 THEN
     ans$(1)=word$
     wordcnt=1
  ELSE  'stack left letter and strip from word
     L$(top)=LEFT$(word$,1)
     top=top+1
     word$=MID$(word$,2)
     GOSUB scramble
     top=top-1 'reset stack pointer
     p=LEN(ans$(1))+1 'set # of insertions
     nextcnt=wordcnt*p 'and total words
     FOR i=1 TO wordcnt 'locate each existing word
        oldloc=INT(total/nextcnt)*(p*(i-1)+j)+1
        temp$=ans$(oldloc)
        FOR j=0 TO LEN(temp$) 'construct each new word
           newloc=INT(total/nextcnt)*(p*(i-1)+j)+1
           ans$(newloc)=LEFT$(temp$,j)+L$(top)+MID$(temp$,j+1)
        NEXT j                'and store appropriatly
     NEXT i
     wordcnt=nextcnt 'update word count for the next cycle
  END IF
  RETURN
```

■

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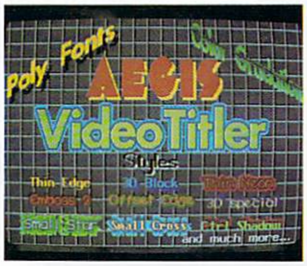
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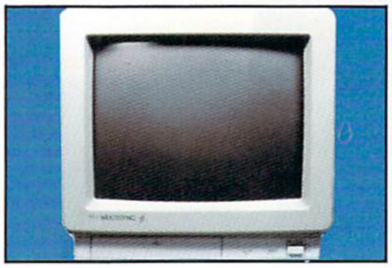
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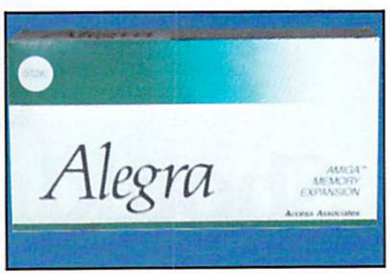
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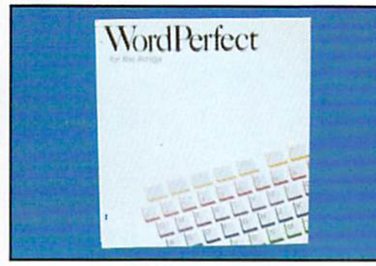
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The Disk That Wasn't

Knowing how to use AmigaDOS' RAM disk and the ASSIGN commands can save you valuable time and disk space.

By Bill Catchings and Mark L. Van Name

IN OUR LAST column we discussed the AmigaDOS CLI (Command Line Interface) and the power that it offers. If you have had a chance to use the CLI since then, you have found yourself typing a command and then waiting for your Amiga. First, it reads your Workbench disk, then it reads the disk that is the object of the command, and then the command gives you its output. The second read is unavoidable; if the command needs data from a disk, then it must read that disk. The first read occurs because AmigaDOS is *disk-based*—all of its commands are stored on the Workbench disk. If you, like us, hate the time spent waiting for the system to complete that first disk operation, read on to find the solution.

The RAM Disk

The key to solving this problem is the Amiga's *RAM disk*. Just as you can store files on disks, AmigaDOS lets you make part of your system's memory pretend to be an additional disk drive. The standard disk drives are known by their *device names*: DF0: for the internal floppy, DF1: for the first external one and so forth. Similarly, this memory-based, pseudo-disk drive has a device name: RAM:. AmigaDOS manages RAM: much like it manages any device—with a program called a *device handler*. The RAM: device handler is RAM-Handler in the L directory of the system disk. AmigaDOS loads it into memory when you first use the RAM: disk. If this file is not on the system disk, you will not be able to use the RAM: disk.

RAM: acts much the same as any other disk drive, except that it is faster. You can perform any of the normal file and directory commands on it, including creating directories in it, copying files to it, renaming them, deleting them and typing their contents. You refer to a file in the RAM: disk by using RAM: as the first part of the file's name. For example, to copy a file FRED from the internal disk drive to the RAM: disk, you would use the command

```
COPY DF0:FRED RAM:
```

This command creates a file with the full path name RAM:FRED.

Like any other disk drive, RAM: can have an icon appear on the Workbench display. Just as no icon appears for a disk drive until a disk is inserted in it, you will not see that RAM: icon until you first use it. You do not have to copy a file into it to make the RAM: disk icon appear. If FRED is the first file in RAM:, a RAM: icon will appear on the Workbench display. You also could make that icon appear just by referring to the RAM: disk with a command like

```
CD RAM:
```

The RAM: icon does not, however, behave exactly like the icon for the standard disk drives. When you close the icon for a disk and remove the disk from the drive, that icon disappears from the Workbench display. If you delete the last file from RAM:, you would expect the RAM: icon to disappear as well, but it does not. Once you have stored a file in RAM:, the RAM: icon remains until you reboot your system.

There are a few other important differences between the RAM: disk and other disk devices. On the plus side, it is several orders of magnitude faster than any disk drive or hard disk. You will not find yourself waiting for the Amiga to read any RAM: files. Also, it is not a fixed size. While a disk is an 800K container, the RAM: disk is only as big as the sum of the sizes of the files in it. It frees memory as you delete files, and grabs what it needs, in 512-byte chunks, when you put new files in it.

The only limit on the size of RAM: is the amount of memory in your system. A 512K Amiga has about 400K left after you boot the system, so a RAM: disk on that system can hold only 400K of data. In fact, you should never completely consume your system's memory for the RAM: disk, because there is a good chance that the system will crash. Also, any memory that you use to store files is unavailable for programs. This means that you must maintain a balance between the memory required by your applications and the memory you use for ►

your RAM: disk. If you have an Amiga with 1MB or more of memory, this is fairly easy. You have to be much more careful with a 512K system, however, or many of your favorite applications might not run.

The biggest negative difference between the RAM: disk and the other disk drives is the durability of the data stored in it. Disks are more or less permanent storage containers: As long as you wait for a disk drive's light to go out before you turn off your system or remove a disk from it, you are unlikely to hurt the data on the disk. In general, that data will survive even a visit from the guru (which happens when your system crashes). By contrast, the RAM: disk is a temporary container: All of the files in it are lost when you reboot your system or when the guru appears. Some companies market *recoverable RAM disks*, the contents of which can survive system crashes, but the one that is included with AmigaDOS is not that hardy. In general, you should avoid putting anything in the RAM: disk that you cannot afford to lose. If you use it to hold such files, be sure to copy those files to a disk before you turn off or reboot your system.

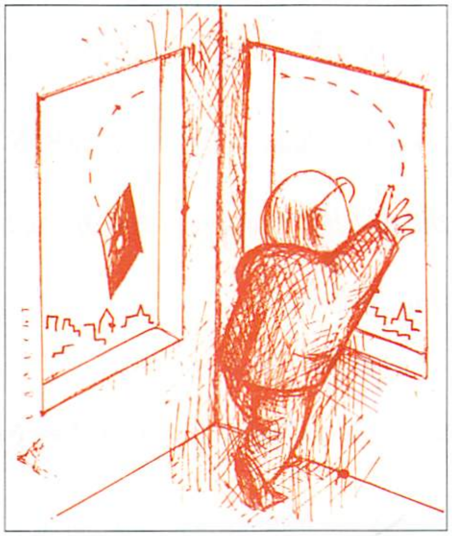
Moving AmigaDOS Commands To RAM

What we want to put into the RAM: disk are the AmigaDOS commands. Then you will not have to wait while the system reads those commands from a disk, because it can read files in RAM: almost instantaneously. Fortunately, AmigaDOS makes this job easy by keeping all of its standard commands in one place: the C directory on the Workbench disk. To move those commands to RAM: and tell the system to look for them there, enter the CLI and type the following three commands:

```
MAKEDIR RAM:C
COPY SYS:C TO RAM:C
ASSIGN C: RAM:C
```

The first two commands make a C directory in the RAM disk and then copy the AmigaDOS commands from the C directory on your Workbench disk into the new RAM:C directory. These commands will consume about 200K of your system's free memory; on a 512K Amiga, you will have about 201K free after executing these commands. (The rest of the memory is used for other operating system and Workbench software.)

Note that the COPY command does not use a device name or even the name of the Workbench disk. Instead, it uses SYS:, which is a *logical device name* assigned to the Workbench disk. Logical



devices are short names for directories, typically ones in which AmigaDOS finds its command files and other required files. Like other device names, logical device names always end in a colon (:). AmigaDOS comes with several preset logical devices. Because the AmigaDOS system software contains many different files, it would be foolish to assume that all of those files were present in your current directory. Instead, AmigaDOS uses these logical names to find any files it needs. The two logical devices we used above are SYS: and C:. SYS: is assigned to the directory that holds all of the system files. This is preset to be the root directory of the system disk. C: is assigned to the directory that contains the AmigaDOS commands, which initially is the C directory on the system disk.

Our first two commands move the AmigaDOS commands into the RAM: disk, but it is the third one that tells the system to stop looking in SYS:C for its commands and instead to look in RAM:C. The ASSIGN command lets you define logical device names. You can create new logical devices or change the meaning of existing ones. ASSIGN's first parameter is the logical device name you want to set (here C:), and the second is the directory (RAM:C) to which that name will refer. You also can use ASSIGN to get a list of all of your current logical device names by typing it without any parameters or with the single parameter LIST.

Logical device names are not static. You can reassign them at any time, or even remove a logical device name completely. To reassign a logical device you do what we did above: Give it a new target directory. To remove the logical device name entirely, you only have to omit the second parameter when you assign it. For example, you could undo the effect of our earlier three commands by simply reassigning C: to its original directory on the system disk:

```
ASSIGN C: SYS:C
```

Alternatively, you could remove the logical device name C: by typing the following command:

```
ASSIGN C:
```

Be careful, however, for this command completely removes the logical device C:. Because the system counts on that name pointing to the directory that contains its commands, you can end up unable to type those commands without using a full path name. Avoid removing the logical device C:, and instead leave it defined as the name of a directory that contains the AmigaDOS commands.

You also should be careful about deleting the commands from RAM:. If you reassign C: to a directory on a disk, then it is safe to delete those commands from RAM:. Do not, however, delete them until you have reassigned C: because you will be unable to execute any commands. The system will look in C: for the commands, which will not be there, and you will be stuck.

You may want to delete a few files, however, in order to recover some of the memory occupied by command files that you use rarely. For example, if you never use the line editor EDIT and rarely need the DISKDOCTOR command, you could free up some memory by using the following command:

```
DELETE RAM:C/EDIT RAM:C/
  DISKDOCTOR
```

You will recover back about 27K of memory. If later you need those commands, you will have to refer to them with a full path name, as in

```
SYS:C/DISKDOCTOR DF1:
```

The memory freed here, however, should ►

outweigh the minor inconvenience of a few extra keystrokes.

MAKING IT AUTOMATIC

By copying the AmigaDOS commands to RAM: you can make your Amiga run faster. Unfortunately, every time you reboot your system you lose both your ASSIGNed logical device names and all of the contents of RAM:. You would have to retype these commands every time. You can avoid this boring task by taking advantage of the fact that each time your system boots it executes a CLI batch file called STARTUP-SEQUENCE. That file sets the system up, loads the Workbench and then transfers you to the Workbench program. STARTUP-SEQUENCE is stored in the S directory on your Workbench disk. To make our three commands a part of the standard boot process for your system, you have only to add them to your STARTUP-SEQUENCE file.

STARTUP-SEQUENCE is an ASCII (American Standard Code for Information Interchange) text file, so you can use any editor to work on it. We used the standard ED editor that comes with AmigaDOS. As always, before you edit a system file, make a backup copy of it. Add our three commands above to STARTUP-SEQUENCE after the line that reads BindDrivers and before the following line (LoadWB). (BindDrivers makes the system aware of any special device software you might have, while LoadWB brings up the Workbench.) If you want to delete any commands from RAM:C, you can put the appropriate deletion commands after the three basic commands we just added. Save your changes to STARTUP-SEQUENCE and the next time you boot you will have a faster system!

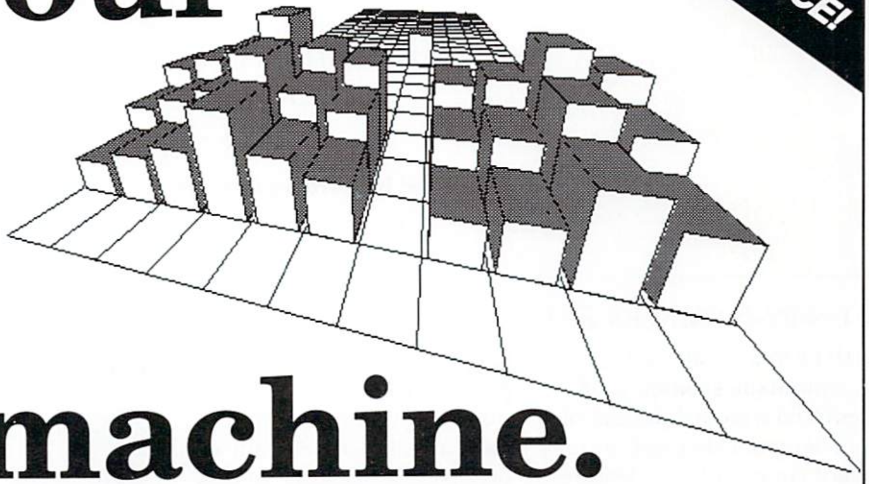
As is true with most tools, AmigaDOS offers more power to those who take the time to learn to use it fully. The combination of the RAM: disk and logical devices is one that can make your Amiga a faster and more pleasurable system. As long as you leave enough memory for your applications to run, the technique we outlined can make the CLI an even more powerful computing tool. ■

Bill Catchings and Mark L. Van Name are contributing editors to AmigaWorld. *Write to them at 10024 Sycamore Road, Durham, NC 27703.*

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WHAT'S NEW?

All the new toys from CES, AmiExpo and

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Compiled by Barbara Gefvert

FUN-BY-NUMBERS KIT

WHO SAYS NUMBERS can't be fun? **Math-Amation** promises to take the tedium out of number-crunching with its on-board control of such features as statistics, geometry and algebra environments, a variety of on-screen calculators and a numeric "dictionary." The system employs WIMP (windows, icons, mouse and pull-down menus), 36 global memories and an expressions editor. On the off-chance you don't remember your last 50 results and the means by which you generated them, Math-Amation does. Both the matrix and scientific calculators are fully programmable; your expressions may be 200 characters long, and if you feel really expressive, the scientific calculator allows 600. Math-Amation converts formulas, technical measurement units and conversion constants. The Business Graphics module will automatically scale 3-D pie, bar and other charts for easy presentation. The package sells for $99.95. For a number of good times call Progressive Peripherals and Software Inc., 464 Kalamath St., Denver, CO 80204, 303/825-4144.



Math-Amation's colorful scientific calculator.

AMIGA ASSEMBLY

COULD YOU USE help mastering Assembly Language Programming, and a better understanding of the Amiga, too? **The ToolCaddy 2.0** includes 21 utilities to make the learning process more productive.

The program offers seven step-by-step lessons covering AmigaDOS, the Exec, Intuition, Graphics, System Structures and the Binary File Structure, and 18 source files that provide examples in Assembly. Send your questions (or $49.95) to The ToolCaddy Works, PO Box 1188, Canyon Country, CA 91351-2600, 805/252-0485.

WHAT A WAY TO PAINT!

PHOTON PAINT ALLOWS all 4096 Amiga-accessible colors on the screen at once. You can reposition the brush gadgets and color palette, or remove them from the screen altogether. Brush operations include twisting, adjustable transparency and mouse-operated perspective tilting, and you can wrap the brush onto any 3-D object. Photon Paint is $99.95 from MicroIllusions, 17408 Chatsworth St., Granada Hills, CA 91344, 818/360-3715 or 800/522-2041.

SWINGING FROM C

CB TREE IS a C programming tool—an indexing system—that works with both the Manx and Lattice compilers. The program increases retreival and comes with a thoroughly-commented C source code. Key and record sizes are unlimited, and records may have both fixed and variable lengths. CB Tree boasts complete B + tree implementation of industry standard B + tree algorithms, and a $99 price tag. Branch out to Peacock Systems, Inc. at 2108-C Gallows Rd., Vienna, VA 22180, 703/356-7029 or 703/847-1743.

NEW AND IMPROVED

DISKWICK 2.0 ADDS a number of features to the previous release. The upgraded disk editor and repair utility includes disk search for hex and ASCII strings, hard-copy capability for disk sectors, requester for file searches and forward/reverse keyboard control within files. Checksums Boot Blocks and Checksums Kickstart Disks are also part of the package, as are refined Hex editing and Info functions. DisKwick's retail price is $49.95, but those who own version 1.0 can upgrade for $10. For details call Tigress, PO Box 665, Glendora, CA 91740, 818/334-0709. ►



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Be a Sport!

DO YOU LONG for snow? Then boot up a blizzard with **Winter Challenge**, Olympic-style competition for up to six players. You can go for the gold in the ski jump, downhill, bobsled, giant slalom and biathlon events. The game is popularly priced at $14.95, and saves you a trip to Calgary. Thunder Mountain's distributor is Mindscape.

Switching seasons (or locales), **World Tour Golf** offers you a choice of over 20 of the world's classic courses (it's purported to be accurate down to the weather conditions)—or you can design your own! Any combination of four human or computer players can compete; if you've always wanted to stroll the fairways with Jack Nicklaus, then simply clone him on screen! You get the advantage of both "golfer's-eye" and overhead views on a split screen. Greens fees are $39.95. Call Electronic Arts for membership details: 1820 Gateway Drive, San Mateo, CA 94404, 415/571-7171.

You can test your abilities as player, coach or owner/general manager in **Superstar Soccer**. If you don't feel up to feinting, trapping, kicking and juggling, then turn your field experience into coaching savvy: make lineups, run the training camp, call on-field strategies and just generally crack the whip. If you think you have an eye for talent, you can try a stint of trading and recruiting, but stay on your toes—players do age with each season, and you don't want to miss out on a championship! Challenge the computer or another player. The disk is $39.95 from Mindscape, 3444 Dundee Rd., Northbrook, IL 60062, 312/480-7667.

Avoid Detection, Accomplish Defection

DATASOFT'S **THE HUNT for Red October** casts you as Soviet submarine Captain First Rank Marko Ramius. As Ramius, you aim to take your fully-armed, state-of-the-art submarine Red October, and defect to the United States. To succeed, you must develop a strategy of stealth and speed, keeping the 113-man crew unaware of your plan. The route you must take is heavily traveled by Russian subs, and consequently, by U.S. and NATO forces, too. NATO and the U.S. do not know your true intent, and the Soviet Northern Red Banner Fleet will do *anything* to stop your defection.



Plan your escape to freedom.

Your sub's speed, depth and bearing are continually displayed. Other navigation tools include a contour map of the seabed (you can superimpose a sonar sweep to plot positions), a main display window to scan the Atlantic, a periscope for detailed views and an early-warning detection system. All options are icon-driven. You can issue orders by mouse or joystick. Scrolling windows display the effects of your orders, new developments and incoming messages. The Hunt for Red October is $49.95 (see your bank for conversion to rubles) from DataSoft's distributor Mindscape, 3444 Dundee Road, Northbrook, IL 60062, 312/480-7667.

Progressive's Spring Crop

IF YOU NEED a telecommunications terminal system *stat*, then make an appointment with **Dr. Term Pro**. The doctor can link your Amiga to a mainframe, and because he's always "on call" via Remote mode, you can transfer files from one computer to another. His phone book can accommodate 300 entries with custom-communication parameters, and you can program 40 different macros over your function keys and define and execute a series of commands with Script Language.

A file utility system, **Diskmaster** allows you to bypass the CLI, and, for most operations, bypass the keyboard as well! Rename and delete files, make directories and create multiple file copies with a click of the mouse. Adjust page length, margins and page numbers with the print/display option, and access, view and copy IFF pictures using the view utility. You can whip your disks into shape for $49.95.

Framegrabber is a fast video image digitizer. It will capture color and black-and-white images from VCRs and video cameras. The included image-processing software allows you to filter, enhance, change the brightness and contrast and more. Framegrabber will save whole or partial frames in IFF or RGB format. It's priced at $499.95.

What do you want in a genlock? How about BNC connectors, and parallel Chromatic Processing based on custom VSLI chip technology? **ProGEN** offers this plus seven adjustable points to make it compatible with your professional equipment. With the included software, you can make any of the 16 available colors transparent for overlaying video effects, and select foreground, background, Amiga-out and video-in options. ProGEN provides composite color video output for all Amigas, and won't distort graphics. The stand-alone unit connects via the RGB port and sells for $399.95. Progressive Peripherals, 464 Kalamath St., Denver, CO 80204, 303/825-4144.

Disassembly Required

DSM, A DISASSEMBLER from OTG Software, is fully compatible with the Amiga assembler. Send any questions (or $30 for the program) to OTG at 200 W. 7th Street, Suite 618, Fort Worth, TX 76102. ►

Desktop Associate

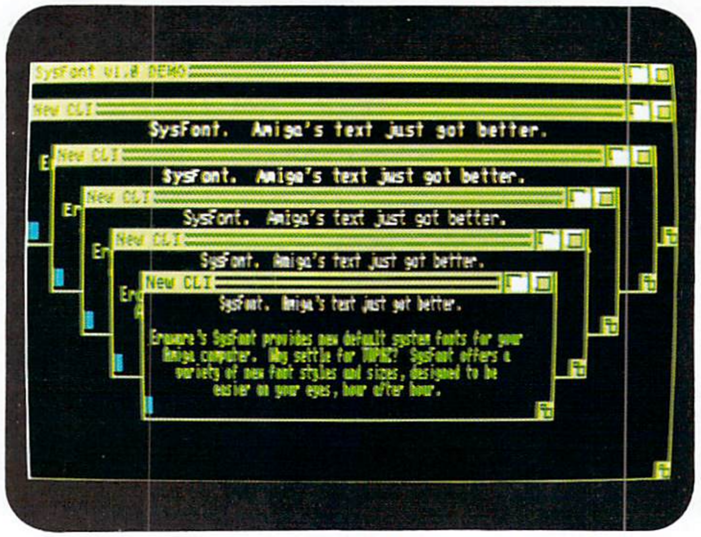
PUBLISHING PARTNER Professional, a desktop publishing program ported from the Atari ST, is now available for the Amiga. Its many features include kerning, hyphenation and text flow around graphics—regardless of shape—in the automatic category. P-squared will group and size multiple objects, reorder pages, import formatted documents from other word processors such as WordPerfect (WordPerfect Corp.) and allow you to view six documents at once. You can define text size down to 1/3600 of an inch—even mix point sizes within characters to create unusual sizes. You can also slant and twist images, and rotate them in one-degree increments. For a complete run down (or printout) of all features, contact Soft Logik Corp., 11137 South Towne Sq. Ste. C, St. Louis, MO 63123, 314/894-8608.

Visualize This

YOU HATE READING manuals—I know you do! RGB Video Creations knows it too, and that's why they've created **DeluxeHelp for DeluxePaint II.** This interactive tutorial runs simultaneously with the Electronic Arts paint program, and includes visual demonstrations of each function along with written explanations. You can select any function to study—from the basics to the most complex—using pull-down menus. For $34.95, your "personal tutor" will help you get the most out of DeluxePaint II. So close your manual and ring up RGB Video Creations, 2574 PGA Blvd., Suite 104, Palm Beach Gardens, FL 33410, 305/622-0138.

Time to Change Fonts

WITH **SYSFONT**, YOU can change the Amiga's text font in the Command Line Interface mode. SysFont allows you to replace Topaz with any compatible font. The program itself supplies 10 options, some of which have been rendered in single-pixel width (as opposed to the double-pixel width of Topaz) to reduce brightness and glare. You can invoke an alternative font any time during a CLI session from WorkBench or the AmigaDOS startup sequence. You can also re-define text and background colors to any of the four Preferences colors through a single option. Among compatible text editors are ED, MicroEMACS 1.2 and TxEd (all by MicroSmiths). SysFont is $24.95 direct from Eraware, PO Box 10832, Eugene, OR 97440.



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FEATURING LOW POWER consumption, a 23-pin external jack and a 30-inch cable, the **PFD-135** 3.5″ external floppy drive is available for all Amiga models. The drive is encased in an all-metal chassis and sports a spring-loaded dust door. $299 gets you the drive and its one-year warranty. A2000 owners might be interested in the **internal 3.5″ floppy drive**. It includes hardware necessary for mounting, and retails for $189. Phoenix Electronics can be reached at PO Box 1565, Clay Center, KS 67432, 913/632-2159.

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BREACH, A SINGLE-PLAYER tactical-squad combat game, involves intelligent opponents and multilevel combat areas. Create your own combat scenarios, or play with the several included. You can arm yourself for $39.95. Aim your questions at Omni-Trend Software, PO Box 733, West Simsbury, CT 06092, 203/658-6917.

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A new chapter in the lore of the Zorkian Universe, **Beyond Zork** presents the Great Underground Empire in chaos; the magical wizards have mysteriously disappeared and monsters now rule. The few remaining enchanters commission you, a peasant adventurer, to reclaim and hide the Coconut of Quendor, which stores the essence of magic. You begin by formulating your character from six attributes. Winning battles and gaining experience increases your powers, as shown by the growing bar charts. To speed your quest you can jump from room to room with the mouse, until at last you venture into the underground lair, where horrible beasties guard the treasure. If want to get chummy with the monsters, you can name them and increase the game's vocabulary. You can play with or without maps (with zoom) and window displays on the four-color screen, and keystroke control is available for frequently-used commands. The Undo command makes taking those death-defying risks less deadly and more defiant. A ticket to Zork is $49.95. Start either quest by calling Infocom Inc., 125 CambridgePark Drive, Cambridge, MA 02140, 617/492-6000. ►

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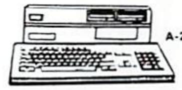
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SYNTHIA

Catch a wave!

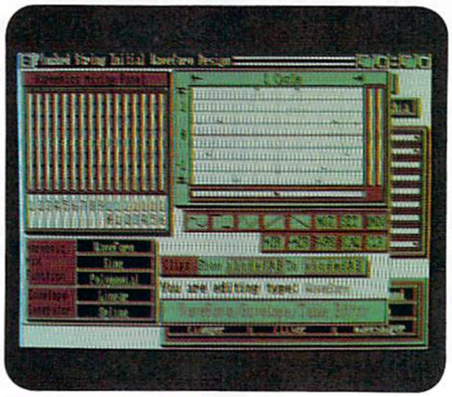
By Bob Lindstrom

WALK COOL AND carry a big checkbook . . . these have traditionally been words to live by for electronic music enthusiasts. Keyboard synthesizers are relatively inexpensive, but high-quality, flexible hardware costs dearly. The Amiga's ability to generate a wide range of sounds means that, when complemented by specially-designed software, it can actually replace that costly equipment.

Enter Synthia, the program that equips your Amiga with many capabilities of expensive professional synthesizers. Synthia's modules simulate five different types of synthesizers: subtractive, additive, interpolative, percussion and plucked string. With these modules, you can create IFF-format instruments for use in other Amiga music programs.

Like ocean waves lapping against the shore, sound waves break against your eardrum with varying levels of air pressure. Synthesizers create sound by manipulating the shapes of waveforms in several ways; each technique is ideally suited for a different set of applications. Synthia's five synthesizers aim to provide the right tool for the job.

The subtractive synthesizer emulates a variety of filters—low and high pass, band pass and band limit—that enable you to remove certain qualities of a waveform in order to produce the sound of an instrument. It excels at the kind of "classic" effects heard in, say, 1950's science-fiction films. The additive synthesizer "piles" the waveforms of 16 harmonics on a basic sound and produces output associated with popular music's synthesized sound. The interpolative synthesizer varies a waveform through time and does an excellent job of simulating woodwinds. Synthia's plucked-string and percussion modules are designed to credibly imitate those types of instruments; in the plucked-string module you can choose to simulate metal or nylon strings.



Finesse a plucked-string waveform.

Each of Synthia's modules is a stand-alone program that you can multitask with the other modules or with another program, such as a note editor. Though module capabilities differ dramatically, design similarities provide continuity. If you learn the basics of one module, you'll be able to move easily to another.

EXPERIMENTATION REQUIRED

The sizeable manual details the features and operation of each module but does little to explain the basics of synthesis. Unless you're familiar with instrument design, oscillators and band-pass filters, you'll find yourself learning through trial and error. This is not really a problem though, because no matter how complete your intellectual understanding of sound synthesis, it takes time and effort to learn the actual effects of twisting a dial. The manual encourages this kind of experimental discovery with several tutorials.

Each module opens onto an instrument-design window. Here you choose, design or draw a basic waveform. From this home base, clickable buttons open a variety of other multitasking windows that offer tools for manipulating the waveform—from adding reverb to layering on the complex textures of waveshaping. Choose a window, adjust the levels and sliders, then select Do Sound to save your creation.

One feature turns the Amiga keyboard into a music keyboard, thus letting you test the sound of your changes. If you like the outcome, you can go to a filters window or select a special effect and make more changes. If the results aren't quite what you expected, the Undo button will erase the most recent change saved.

Although the process of creating an instrument sound is calculation intensive, Synthia generally accomplishes the task in a few seconds, and maintains a brisk pace during instrument design, too. Speed is important since you will spend a lot of time running down blind alleys and fine tuning.

Synthia's sound quality is impressive, often approaching the caliber of digitally-sampled instruments. The special effects, filters and waveform-editing tools involve simple freehand drawings as well as elaborate mathematical transformation. These enable you to produce results ranging from fantastically fanciful to remarkably realistic (including imperfections that distinguish real-instrument sound from electronic simulation, which is often unconvicingly perfect).

You can also use Synthia to customize digitized instruments, or extract the envelopes of a digitized instrument and use them as a foundation for your own creations. This ability to create complex waveforms, however, carries some complications. It could take hours to precisely realize a sound from your mind's ear. Getting proficient with Synthia's intricacies will take weeks or months, even though you can produce results almost immediately.

Like the digitally-sampled instruments they imitate, Synthia's instruments are prone to clicks and pops, particularly when choosing the location of repeat loops. Synthia's repeat sliders are clumsy and inadequate compared to the zero-seeking function of a good digital editor; therefore, you may want to have a sample editor on hand to perform surgery on your Synthia instruments.

Synthia produces one- to five-octave

instruments over an 11-octave range—your Amiga can reach down to the groaners and up to the screechers as never before. Unfortunately, not all Amiga music programs will recognize the extreme ranges. To remedy that, The Other Guys have included a proprietary, 32-track SMUSPlayer on disk that will reproduce the full range of Synthia-created instruments. Also included is a second data disk with sample instruments and several excellent pop-music scores.

One bug in the program is more irritating than destructive. When choosing a menu selection while you're sounding a note, the note will persist until you repress its keyboard key. More troublesome was a crash that occurred whenever the Flange effect was used three times in a row.

With its multitasking window design, speed and impressive flexibility, Synthia is an extraordinary achievement. Both musicians and hobbyists will appreciate it, whether they miss their synthesizers, want to avoid the ins and outs of digital sampling, or demand flexible design. Synthia makes the most of the Amiga.

Synthia
The Other Guys
55 North Main, Suite 301D
Logan, UT 84321
801/753-7620
$99.99
512K required.

FastFonts

A triple-dip treat

for customizing programs.

By Carl Mann

ONE OF THE AMIGA's outstanding features is the ease with which you can reconfigure its attributes to meet your needs. FastFonts, by Microsmiths, is a non-copy-protected program that can help you establish your Amiga's own personality.

FastFonts is a carefully crafted trio of extremely compact, multitasking enhancements and support resources. Each of the three modules exploits a different set of capabilities to your advantage—you decide which particulars to add to each of your own applications. Because FastFonts is designed for use with other programs, each compact module runs on less than 10K.

The modules can be launched from Intuition, invoked from the CLI or called directly from a startup-sequence. From Intuition, the defaults give you an instant taste of FastFonts' power. All modules accept arguments from the CLI or startup-sequence, making the program immediately useful to the novice, and putty in the hands of any seasoned user.

Modular Modeling

The FastFonts module speeds 80-column text display by up to 500%. While the increased pace is noticeable with the standard CLI, you can see an even greater improvement when running it with your word processor. Text that normally crawls along *zips* with the help of FastFonts.

This module also provides a choice of four new, highly readable fonts in eight-, nine- and 11-point sizes. Another benefit—this one undocumented—is improved cursor control. Even with the Preferences key repeat rate pushed nearly to the maximum, my cursor stopped the very instant I released the backspace or delete key.

The distribution diskette actually contains two versions of the FastFonts module. The "fancy" version has a full Intuition interface for first-time fiddling and dedicated mouse users. The smaller one is for disks that are nearly full; it works from the CLI or startup-sequence.

The FunKeys module "civilizes" Amiga's windows. FunKeys enables you to bring forward and activate any window without fumbling through a hodgepodge of front and back gadgets. Window sizing is automated, too—just show FunKeys which windows to shrink to what size. With this feature you can keep secondary applications running in reserve until you need them. Then, a simple keystroke will bring forward and enlarge the window you need.

Two text macro keys turn repetitive jobs—both complex CLI command sequences and simple tasks (like typing a return address)—into sheer, automated joy. All the FunKeys functions, as well as the on/off switch, are accessed simply by pressing the left Amiga key in combination with the corresponding function key. You can select any one of five activation key options. ►

The ScreenBlanker module automatically dims the monitor screen while you are not using the keyboard or mouse, thus keeping images from being permanently burned into those delicate phosphors. The 60-second default can be adjusted to any desired interval through the CLI or startup-sequence arguments, and since ScreenBlanker consumes only 1.5K of RAM, it can even be installed on a 512K Amiga running a paint program.

FastFonts includes two versions of this module, too. One dims the screen to half-brightness (enabling you to keep your place in the midst of a fragmented work flow) and the other version totally blanks the display. I expect ScreenBlanker might return the cost of the entire package in terms of extended CRT life.

Performance Plus

In nine months of continuous use, FastFonts has not provoked a single glitch or crash. (I run all three FastFonts modules plus two other enhancement programs along with my word processor.) The manual is written in clear terms and the examples are excellent. I had to reread certain sections before I understood just how to make the FastFonts modules work from my startup-sequence, but the finished effort worked just as planned on the very first try. A reference strip is not supplied for function keys, so you will have to create your own.

The defaults are reasonable, and the modules will work quite well for you as shipped, so you can benefit even if you're strictly a "mouse person." However, out of over 55 major files, only four are represented by icons. That means restarting them manually every time you boot up, unless you automate them through the startup-sequence. If ever there was a good reason to start using the CLI and ED, FastFonts is it!

The CLI-only goodies include nine fully-documented assembly-language replacements for common AmigaDOS commands. Microsmiths is advancing an effort to replace all command files, which were written in the now-obsolete BCPL, with their assembly-language equivalents. The FastFonts disk includes new CD, Echo, Protect, MakeDir, FileNote, Prompt, Stack, Break and Run commands, all of which are much better than the originals. The package also includes a benchmark program and a demo version of Microsmiths' excellent ED replacement, TxEd.

I have a large collection of convenience tools, most of which are moderately helpful. But I reach for FastFonts every time I crack the seal on a new software package. My heavily-customized Workbench disk includes the FastFonts library as standard startup procedure. FastFonts is a bang-for-the-buck bargain, and I'll vouch for it wholeheartedly. Take a bow, Microsmiths!

FastFonts
Microsmiths, Inc.
PO Box 561
Cambridge, MA 02140
617/576-2878
$39.95
No special requirements.

Hot Licks

How hot is hot?

By Michael Brown

ACCORDING TO INFINITY Software, their first music program was "designed to be a fun, easy-to-use performance tool with editing functions." Hot Licks' controls are logically displayed on a 16-color, medium-resolution screen that resembles a cross between an electronic synthesizer and a tape deck. A window on the screen displays directories, files and other information, and lists the available instruments. Using the scroll and select buttons you can peruse directories and activate instruments.

A 72-key piano keyboard is laid out across the bottom of the Hot Licks screen. Two sets of sliders, located immediately above the on-screen keyboard, control the range of notes that you can access via the the QWERTY board. Other gadgets include tempo and volume sliders, and a set of tape-deck controls (fast forward, rewind, play) for playing and editing. The program features pull-down menus, but keyboard alternatives are available for most items. While the screen cannot be sized, you can toggle a drag bar and pull the screen down with the mouse. You can easily exit the program by clicking the power button in the top, right corner of the screen. I do like this idea, but I found it easy to accidentally select this gadget while looking for something else, thus losing all work in progress. The graphics are nice, but because there is no visual display of musical data, the program's editing tools are difficult to use.

Heated Harmony

The program supplies 19 instruments and five sound effects, some of which are quite good. But for a program designed to be a performance tool, I found the lack of control over the instruments to be a major deficiency. There are no provisions, for example, to change attack or decay times. Because the piano sound doesn't fade, it doesn't sound authentic when used in a musical passage. Although you can load up to 20 instruments at once (chip memory permitting), only one instrument can be played or recorded at a time. To select instruments or sound effects, simply use the function keys. After a directory has been read from disk, it remains in memory for quick access should you decide to reconfigure your instrumentation. This is a nice feature, but the program is still quite a chore to set up, since you must access the directory every time you want to select an instrument. It would be much faster to select a slot and an instrument to fill it at the same time.

The chord mode, accessible through the QWERTY keyboard, allows you to play three tones by pressing one key, so that a fourth (solo) voice can play over them. However, you can't mix the volume levels of the four voices, so the chords tend to overpower the solo line. Hot Licks also allows you to turn off the low-pass sound-chip filter of the Amiga 500 and 2000. This, I found, produced a richer sound. (Toggling the filter had no effect on the 1000.)

Notes are played using the on-screen keyboard and mouse, the Amiga's QWERTY keyboard or both. A drawback of using the mouse to play the synthesizer, though, is that the program cannot keep up with even relatively slow mouse movement. As the program tries to catch up with the mouse, runs of notes become uneven and notes continue to sound long after the mouse has stopped.

The program features a visual and audible metronome to help you stay in time while recording. Whenever I played fast sequences, however, the metronome beat went haywire. And it seemed that all sequences, whether recorded from the keyboard or mouse, never started on the

downbeat when played back.

You can save scores in either of two formats: simple SMUS (for use with programs like Sonix from Aegis) or fancy SMUS (for use with programs like Deluxe Music Construction Set from Electronic Arts). One option for replaying scores is the Jukebox mode, which delivers several compositions in a row. Setting up jukebox selections is needlessly complex though; you must create a script file of command strings. IDIR, for example, is a command to change the directory in which the instruments are found, and SDIR is used to change the directory in which the scores are to be found. Instead, why not supply a pop-up window where this information can be typed in?

The program multitasks without a hitch. It does not, however, support MIDI, which I consider to be a drawback. With the large number of inexpensive MIDI-compatible keyboards hitting the market, Amiga developers are missing a major opportunity by ignoring this feature.

The manual is brief, but adequate. The first quarter covers the functions of the screen gadgets, the next half is comprised of tutorials for playing, composing and editing, and the rest consists of brief appendices and an index. Although the package advertizes that Hot Licks contains nothing to preclude making copies or installing it on hard disk, the program is protected by the look-this-word-up-in-the-manual arrangement. The only problem here is that many passages displayed on screen cannot be found on the page indicated.

Hot Licks is a synthesizer, but it doesn't give you real control over the sound chip. It's also a sequencer, but it's approach to recording and editing is awkward and just plain inaccurate. It is a composition program too, but it doesn't display musical notation. Hot Licks tries to accomplish much. It offers great features, but I am sorry to report that it doesn't follow through with great execution.

Hot Licks
Infinity Software
1144 65th St., Suite C
Emeryville, CA 94608
415/420-1551
$49.95
No special requirements.

Time Lord

Master the moments—from within.

By Sheldon Leemon

TIME LORD IS an inexpensive battery-backed clock/calendar for the Amiga 1000. But price is not the only thing that sets it apart from other clock/calendars. Since it's installed internally (in the Complex Interface Adapter chip socket), Time Lord doesn't preclude using devices that plug into the joystick or parallel ports. (As a result it is somewhat more difficult to install and remove than those which plug into an external port.) Time Lord does, however, make it impossible to use devices that plug into the 68000 socket (memory expanders and accelerator cards, for example), as the installed module hangs over the 68000 chip.

Installing the Time Lord module requires opening the 1000—a somewhat daunting prospect for the average user. Fortunately, Time Lord comes with both a written manual, composed mostly of diagrams, and an on-line instructions with IFF picture files and a viewer program. The picture files are particularly helpful; color cycling highlights areas of interest.

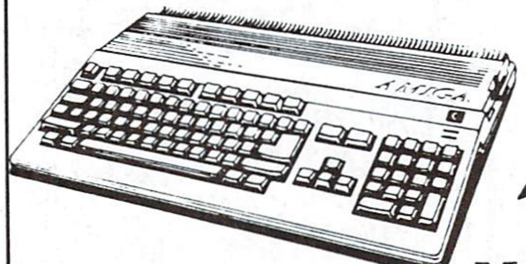
Reaching your target area (where the clock is to be installed), entails removing 19 screws as well as the Amiga's plastic lid and the metal cover underneath. Then you must unplug the floppy drive connector to expose the CIA (Complex Interface Adapter) chip. The next step, actually removing the CIA chip, is probably the most critical part of the operation. Unfortunately, the instructions go no further than to say that you should carefully remove the chip.

A typical removal method involves gently prying alternate ends of the chip. It is important to be sure that you are prying the chip, though, and not the underlying socket, since that can cause serious damage to the computer. The prying method is especially difficult to use on the CIA chip, since one end of the chip is practically inaccessible. Working as carefully as I could, prying from just one end, I could not extract it without bending some pins. Although I was able to straighten them, it is possible to bend the pins so badly as to require a new chip—about a $20 mistake. A far better ►

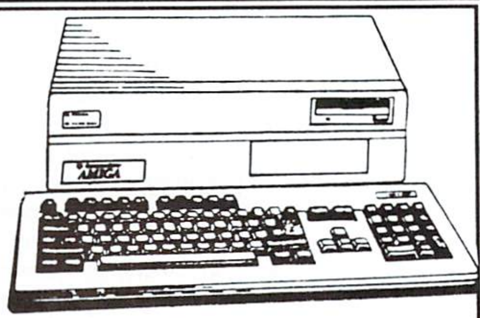
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solution is to purchase a chip extractor tool (I found one for $6.95), which allows you to easily remove chips without damaging them.

After you've removed the CIA chip, all that remains is to plug it into the 2½″ × 3″ Time Lord module, and plug the module into the empty socket. Both operations require you to carefully line up all of the pins, making sure each goes into the correct hole of the socket. When you've connected the floppy drive cable again, you're ready to test the operation of the computer and clock. If all has gone well, your system should boot normally from the Kickstart disk.

The Time Lord package includes two programs, Settl and Gettl, that you can add to your Workbench disk. Together, they allow you to set and read the clock/calendar. A Gettl command in the s/startup-sequence file of your Workbench disk will automatically read the Time Lord module and reset the system clock each time you power up. Although the Gettl and Settl programs work well, it would have been nice if Amazing Devices had used a format similar to that of the Commodore Setclock program so that you could use the standard startup-sequence file from the new 2000/500 Workbench disk.

Although the installation procedure may at first seem complex, I was able, without any real hardware experience, to read all the instructions, view the picture files, install the Time Lord, test it and reassemble the Amiga in under 45 minutes.

The Time Lord module I installed worked on the first try, and proved accurate and reliable in operation. Still, considerable caution is in order. Poking around in your computer without a good idea of what you are doing can lead to serious problems. Accordingly, the instructions make it very clear that you install the clock at your own risk. If you are comfortable with plugging in chips, though, you may find Time Lord to be a worthwhile investment in keeping your Amiga 1000 up to date.

Time Lord
Amazing Devices
PO Box 611075
San Jose, CA 95161-9973
$39.95
No special requirements.

Analytic Art

Put a fractal under your Amigascope

By Louis Wallace

THERE SEEMS TO be some sort of force surrounding the Amiga, compelling creative individuals to spend countless hours transforming obscure mathematics into iconological entities, abandoning the math itself in favor of the intricate, graphical end-results. Those of us with an inclination to assault unexplored areas of the Mandelbrot function welcome this force, as it has added new playthings to our arsenal. My newest toy of this genre is Analytic Art.

Only one fractal, the one provided, is at your disposal. The Fractal Generator allows you to examine any area of the supplied Mandelbrot function at any level of detail, zooming in and out with ease. You have a choice of four screen formats, 320 × 200, 320 × 400, 640 × 200 and 640 × 400. Each uses the maximum number of colors (16 or 32, depending on the resolution). The program is very fast, and unless you have zoomed into a particulary complex area, it draws the screen in only a few minutes. Although you cannot change the math formula, you can get different perspectives by switching back and forth between the Mandelbrot and Julia Set (another form of fractal related to the area of the Mandelbrot you are exploring).

Another module, Spheres, is an excellent IFF mapping program. It maps any IFF image to the surface of a sphere. You can change the size of the sphere, make it elliptical and change the poles from north/south to east/west. These images can be saved in IFF format for later use in another program.

A third utility, 3D, allows you to manipulate a finished Mandelbrot (or other IFF image) in three dimensions. You can change the viewpoint, magnify, reduce and rotate the image. You can also create various forms of stereo images from your pictures. One of the 3-D functions I liked most is 3D Plot, which allows you to create topological maps of the image, with the height based on the color of each dot. You can reconfigure any map by reassigning height values to colors. ►

There are two other modules that are fun to play with but don't have much practical use. With the Sierpinski Gasket Generator you can produce some very intricate images using random numbers, the given fractal and some simple input. The Henon Orbit Plotter module can create a form of contour map.

The documemtation mentions a sixth program, the Gallery, which was not implemented on my version. Evidently it will be a slide-show generator with color cycling and other special effects.

I had a lot of fun with this program. By itself, the Fractal Generator is really no better than other fractal programs I have seen, some of which are public domain. But it offers so many special features—including the ability to generate Julia Sets—that although I have several good Mandelbrot generators, I find Analytic Art uniquely useful.

Analytic Art
Crystal Rose Software
109 S. Robles Ave.
Pasadena, CA 91101-2417
818/795-6664
$59.95
512K required.

GAME SHORTIES

ALIEN FIRES

ALIEN FIRES IS the first of a series of science-fiction adventure games involving innovative player-perspective graphics, ease of play and fascinating use of the Amiga's speech capabilities. The story is this: you have been sent into the future by the TimeLord Elders. Somewhere on this small planet is Samuel Kurtz, the scientist who has created a time-travel device. Your mission is to locate Mr. Kurtz and his time machine, destroy all traces of the device and thereby save time itself.

All the controls are well-designed, usable and effective. You can wander around the planet by using the arrow keys (the left and right arrows turn you, the down arrow moves you backward, the up arrow sends you forward) or by clicking the on-screen arrows. You do not actually see yourself (except when you are dead—a fascinating philosophical point); rather, you see whatever lies directly in front of you. At any point during the game you can check your stats (strength, dexterity, etc.), which you configure at the start of the game.

The game's most impressive element is its emphasis on vocal interaction. When you meet one of the planet's many characters, you can either fight or talk with ►

him. To speak, press the "S" key or one of the on-screen icons, and type in your question. If you ask the right question correctly, the character will respond—solely through the Amiga's speech synthesizer—with valuable information.

This is a truly great idea! However, it has two major problems. Because the pitch and intonation is not quite right, the Amiga's voice is difficult to comprehend (updated versions now include text). More importantly though, learning to ask the right questions is hard work, and the program doesn't offer much help. If the character can't answer or doesn't understand your question, he will mutter one of a few stock responses. "I don't know" is great; "Sorry, I don't follow you" is fine; "I'm sorry, I don't understand" is okay; "Give me a break, buddy, how should I know?" is objectionable; and "What do I look like, an information booth?" is funny the first time, annoying the second and infuriating and insulting by the third.

The game has two other problems. While you can save your adventure, each time you do so you must re-boot the system. The manual has instructions for loading the game into expanded RAM, and it can be put on a hard drive (two very positive features), but for those of us with 512K and floppies this isn't much consolation. Also, the player-perspective feature is designed so that even though you can see down an entire corridor, a wandering character doesn't appear on the screen until you are nose-to-nose with him. This effectively negates the whole visual emphasis of the game. As a result, you can—fortunately or unfortunaltely—avoid unpleasant characters, even if you occupy the same room, by simply walking wherever they're not!

Alien Fires is impressive, but its flaws are significant. The concept is extremely strong, and with proper attention to logistics, the Alien Fires games could evolve into an important series. *($39.95, Paragon Software, distributed by Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404, 415/571-7171. 512K required.)*

—Neil Randall

Fire Power

I ADMIT IT. I like arcade games—the good, old-fashioned shoot-em-ups where you've got to get them before they get you. Fire Power, a fast-paced war game, poses you as a tank driver whose main objective is to capture the enemy's flag. Along the way you get to fire at anything that looks threatening or doesn't get out of your path.

This is the first release of MicroIllusions One-To-One arcade series, designed so that you and an opponent can blast away at each other simultaneously. You can opt to wage war against the Amiga, another person sitting beside you or with someone at the other end of a modem line.

The game is played on a large and intricate battlefield. In person-to-person mode, each player has half the screen as their viewport. Each can see his tank and a small part of the battlefield. Your perspective is from above, and as the tank moves, the screen scrolls quickly and smoothly. Across the battlefield are scattered a variety of objects such as trees, roads, buildings, fuel depots and military bases. Some of the buildings are yours, some belong to the enemy. You can usually find a way into a base either by passing through a gate, or by my favorite method—using the tank's gun to shoot a hole through the protective wall. Sometimes when you destroy an opponent's building, soldiers will flee. It's great fun to chase them and run them over with the tank (this produces a squishing sound and leaves a blood smear behind). To win extra tanks, you must find and destroy the enemy jails that house some of your men. When you hit these buildings, you can drive through the burning wreckage, rescue the soldiers and deliver them to your camp's medical center.

Meanwhile, the enemy doesn't idly sit by and watch you destroy his city; he challenges your installation and people, too. To make things even more interesting, armed helicopters from both sides continually patrol the area. The tanks will occasionally run into gun towers that try to keep them from making it home. And if ever the two tanks find each other, look out!

The game features excellent digitized sound effects, from the rumbling of tanks and the whirling of helicopters to the explosions of artillery. These, combined with the excellent graphics, give you a war game that does justice to the Amiga's special features. If you like hard-core violence, steady action and realistic sound effects, Fire Power is for you. *($24.95, MicroIllusions, 17408 Chatsworth St., Granada Hills, CA 91344, 818/360-3715. 512K required.)*

—Louis Wallace

Into The Eagle's Nest

A SINGLE-PLAYER joystick game, Into The Eagle's Nest casts you as an Allied soldier. Your mission is to enter a Nazi controlled castle, rescue the prisoners and destroy the castle. Of course the Nazis don't plan on making your life easy!

The Eagle's Nest offers an aerial view from which you can see the walls, doors and inhabitants of the castle, as well as your soldier. You move through hallways, trying to find keys to open the metal doors (keys can only be used once). It's important to always remain on the lookout for more ammunition and medical supplies, because you can take only so much damage before you die. Sometimes you can find extra-point baubles like gems, paintings and vases, but more often you run into enemy soldiers. They are fairly easy to kill, but you're sometimes faced with so many that you must find a place where you can shoot from, but avoid being fired at.

The prisoners are hidden throughout the castle's four levels, as are detonators that will prove useful for exploding the Nazi stronghold when (and if) you make it out. You can choose either easy or hard mode (at the advanced level the Nazis will not only show less mercy, but they will sustain more damage, too). There are two complete castles, so even if you master the first, a more challenging manor awaits.

Only couple of things bothered me. One was sound effects. While the game starts off with some excellent music, the combat sounds are somewhat tame. Maybe I'm fussy, but I expect gunshots to sound exactly like gunshots, not muffled bangs. The other problem is that the screen scrolls too quickly. Instead of gliding smoothly as you move, your player jumps abruptly from place to place.

Overall however, I like Into The Eagle's Nest. Between the two castles, you can do a fair amount of playing . . . if you can stay alive! *($39.95, Mindscape, 3444 Dundee Rd., Northbrook, IL 60062, 312/480-7667. 512K required.)*

—Louis Wallace ■

HELP KEY

While spring cleaning his bulging mailbox, Load-and-Run answers 500, 1000, even 2000 questions.

By Louis R. Wallace

Baffled Booter

Q: *I have an A2000 with three megabytes of RAM, a Bridgeboard and an internal hard drive. My first problem is the length of time it takes to load the operating system. All access is from the floppy up to the point the hard drive takes control. My hard drive has a complete set of Workbench files and directories, so why can't I boot directly from the hard drive and get everything eight to 10 times faster (like MS-DOS machines)? Also, my system won't automatically load the correct printer driver when I turn on the machine. I must load Preferences, choose my printer and then select save. Each time I boot I have to repeat the process. What am I doing wrong?*

D. Sanders
Norfolk, NE

A: To shorten boot time, you could assign the system to the hard drive immediately after it is mounted, by adding ASSIGN SYS: DH0: to your startup-sequence. The command would turn operation over to the hard-drive-based software at the earliest possible moment. From then on all access to the C directory would be from DH0:. As for booting Workbench directly from the hard drive, the 1.2 operating system does not allow that. However, the promised 1.3 system should be capable of doing so.

Your second problem is caused by having two complete Workbench systems, one on the hard drive and one on DF0:. When you select Preferences, it is loaded from the SYS: directory, in your case DH0: (after completing the startup-sequence, SYS: is DH0:), and saved to DH0:. But you are booting from DF0:, so its Preferences are used when you first start the computer. DF0:'s Preferences are not altered by the changes you saved to DH0:. The solution is easy, however. After you boot the machine, load Preferences and set the parameters as you want them. Select the save option. Then, from the CLI, copy those Preferences over to DF0:. COPY DH0:PREF#? TO DF0: will install the proper Preferences information on your boot disk (DF0:), so it will appear when you boot.

500 Games

Q: *I bought several older Electronic Arts games, but they won't run on my system (an A500 with the A501 512K RAM board). I thought the Amiga 500 was fully compatible with the A1000. What's wrong with my A500?*

D. Stone
Boston, MA

A: Nothing is wrong with the computer; the problem lies in the software. Some early Amiga programs (including some Electronic Arts games) will not work properly if the machine has more than 512K of memory installed. You have two options. If the programs do not auto-boot, you can use the 1.2 Workbench tools NoFastRam and SlowMemLast (found in the System drawer on the 1.2 Workbench) before running the program. Your only other choice is to remove all memory beyond 512K. On the A500, you must remove the A501 memory expander. On the A2000, however, there is no such solution, as it comes with one megabyte of unremovable RAM on the motherboard.

Don't Go To Pieces

Q: *I use my Amiga 1000 mostly for playing games. I thought it would be fun to change some parts of the games such as voices, background detail and perhaps even game play. Is there any way to decompile a program? Are there any books on the subject?*

J. Wargo
Utica, NY

A: You can't change a compiled (or assembled) program back to the source code used to generate it, but you can disassemble it (list it as assembly language) if you have a machine language monitor like the MetaScope Debugger from Metadigm. However, unless you are very skilled at 68000 assembly language, what you get is likely to be completely meaningless to you. As far as changing the program, unless you have the original source code (C or assembly) and are proficient at programming the Amiga, you won't be able to make any changes or alterations. While there are no books that describe decompiling software, you could get a good book on C or 68000 assembly programming, and learn to write your own programs.

Safety First

Q: *I have several basic but nagging questions. Is it safe to leave Kickstart, Workbench or any Amiga disk in a drive when the machine is off? Does it hurt to leave the Amiga on for long periods of time? When displaying a 100 × 100 BOB (or any large BOB) from Amiga Basic, it flickers like crazy. Why, and can I eliminate the flicker?*

C. White
Missoula, MT

A: It is probably okay to leave a disk in a drive while the machine is off (I do it all the time), but to be safe always use a backup of the disk. Keep the master disk in a safe place, so you can make another copy if your working disk becomes damaged.

As for leaving your Amiga on all the time, that's more difficult to answer. All electronics have a finite lifetime, and the Amiga is no exception. By leaving the computer on all the time, you increase its chances of needing service, but that time may still be a long way off. Turning the machine on and off all the time ►

is certainly more dangerous, because a weak chip is more likely to die when it receives a power surge than when it is in normal use. In the *AmigaWorld* offices (where Amigas get a workout five days a week), we turn the machines on once in the morning and leave them on for about 10 hours. The Tech Editor's A1000 is an original developers model which has had just about every third-party device invented installed in or on it over its career. After about two and a half years of daily use, the machine still hasn't had a problem. Sturdy little computers, these Amigas! Finally, your BOBs flicker because Amiga Basic is constantly refreshing the image. Unlike Sprites, BOBs actually become part of the bitmap. Unfortunately, Amiga Basic is just not the proper language for BOBs. To get rid of the flicker you must use double-buffering techniques (draw on one screen while looking at another, then change the screen you are looking at to the newly created image), which Amiga Basic does not support. However, if you are not constantly animating the BOB and just want it to sit without flickering, you can use the screen Get and Put commands. Load the BOB and place it on the screen with the normal Amiga Basic animation commands. Use screen Get to put that area of the screen in an array, then use Put to place it back in the same location and turn off the BOB. The image will sit there without flickering.

The Path Not Taken

Q: *I am having problems with the CLI commands PATH, ASSIGN and CD. I have a 512K A1000, and want to put the frequently used commands in the RAM disk. I want to use the PATH command to search the RAM directory before AmigaDOS searches the current directory, but I can't get PATH to forget about the current directory.*

J. Trotter
Downey, CA

A: First, use ASSIGN to direct AmigaDOS to look in your RAM:C directory for the commands you placed in RAM, then use PATH to have it search for the remainder of the CLI commands in the C directory. The example batch file copies often used CLI commands to RAM, assigns the C directory to RAM:C, then uses the PATH command to create a path back to the normal C directory to find the other commands.

```
makedir ram:c
copy df0:c/dir ram:c
copy df0:c/copy ram:c
copy df0:c/cd ram:c
copy df0:c/assign ram:c
copy df0:c/ed ram:c
copy df0:c/run ram:c
copy df0:c/execute ram:c
assign c: ram:c
df0:c/path df0:c
```

You can run this file with the EXECUTE command, or add it to your startup-sequence.

Where To, Buddy?

Q: *I would like to write to Commodore for some information. What is their address?*

A. DeBusk
5th Signal Command

A: Write to Commodore Business Machines at 1200 Wilson Drive, West Chester, PA 19380. Dial 215/431-9100 for the main switchboard, 215/436-4200 for the customer-support line. ■

Circle 143 on Reader Service card.

THE READERS' CHOICE



"HOW COULD HE be so positive/negative about such an awful/outstanding program? I could rate it better than that!" Go ahead, now's your chance to tell us what you think. For the past two years, we editors have applauded our favorite products with the Editors' Choice Awards. This year we leave the voting up to you. On the supplied coupon (or a postcard), rate your hardware and software over a scale of one (the lowest) to 10 for each of the three criteria (A, B and C) listed in the appropriate category. Send your votes to: The Readers' Choice, *AmigaWorld*, 80 Elm St., Peterborough, NH 03458.

In the December issue, we'll present the 1st Annual Reader's Choice Awards with all the pomp and glitter they deserve. However, unlike the Academy Awards who employ the prestigious accounting firm of Price & Waterhouse for their tabulations, *AmigaWorld*'s results are entrusted to the firm of Cutrate & Watergate, infamous for their security leaks. While they can count accurately, they can't keep secrets. In upcoming issues, watch for pre-ceremony peeks inside the envelopes.

CREATIVITY (graphics, video, music, desktop publishing)
A) ease of use
B) flexibility (special equipment needed, integrates with other programs)
C) professional features (Can you use it in your business/studio?)

GAMES
A) playability
B) presentation (graphics, sound)
C) longevity (How long does it hold your interest?)

HARDWARE (memory expansion, hard drives, digitizers, genlocks)
A) ease of installation
B) ease of use
C) technical support

HOME (educational, finance)
A) ease of use
B) documentation (complete reference, examples, tutorials)
C) flexibility (Does it have a variety of uses or will you grow out of it?)

PRODUCTIVITY (spreadsheets, databases, accounting, telecommunications, word processors)
A) ease of use
B) flexibility (import files from other programs, a variety of applications)
C) advanced features (Can you grow into the program?)

PROGRAMMING (languages, utilities)
A) documentation (complete reference, examples, tutorials)
B) flexibility (integrates with other libraries, routines)
C) advanced features (Will it support more complicated applications?)

MISCELLANEOUS (whatever is left)
A) ease of use
B) documentation (complete reference, examples, tutorials)
C) performance (Does it do what was promised?)

PRODUCTS	**RATING** A	B	C
______	______	______	______
______	______	______	______
______	______	______	______
______	______	______	______
______	______	______	______

COMMENTS______

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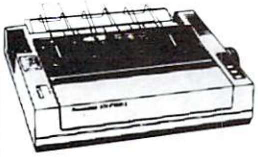
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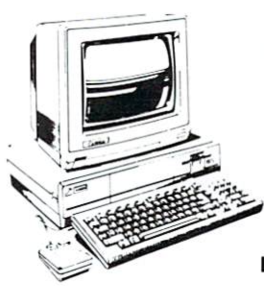
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from p. 46

```
main()
{
 ULONG   flags;
 int     count;
/*-----open Intuition and graphics---------------*/
 open_all();
/*-create propinfos, itext, images, and gadgets--*/
 for(count=0;count<(TOTAL-1);count++) \
   create_prop(count);
 create_itxt(0, "R");
 create_itxt(1, "G");
 create_itxt(2, "B");
 create_image(2, &idat);
 create_image(3, &idat2);
 create_gadget(0, 50, 40); /* make AUTOKNOB pots */
 create_gadget(1, 50, 60);
 create_gadget(2, 50, 80);
/*-------changes to color sliders---------------*/
 prop[1].Flags|=PROPBORDERLESS; /* no border for */
 prop[2].Flags=FREEHORIZ;     /* green; alternate */
 prop[2].HorizBody=0xffff/0x4; /* image blues knob */
 gadget[2].Flags=GADGHIMAGE | GADGIMAGE;
 gadget[2].SelectRender=(APTR)&image[3];
/* this one's  different so we'll do it manually */
 prop[3].Flags=AUTOKNOB | FREEVERT;
 prop[3].VertBody=0xffff/0x03;
/* knob is 1/3 of container */
 gadget[3].NextGadget=NULL;
/* final one in the list */
 gadget[3].LeftEdge=-15;
 gadget[3].TopEdge=10;
 gadget[3].Width=15;
 gadget[3].Height=-19;
 gadget[3].Flags=GADGHCOMP | GRELRIGHT | GRELHEIGHT;
 gadget[3].Activation=NULL;
 gadget[3].GadgetType=PROPGADGET;
 gadget[3].GadgetRender=(APTR)&image[4];
 gadget[3].SelectRender=NULL;
 gadget[3].GadgetText=NULL;
 gadget[3].MutualExclude=NULL;
 gadget[3].SpecialInfo=(APTR)&prop[3];
 gadget[3].GadgetID=3;
 gadget[3].UserData=NULL;
/*------------Open a screen----------------------*/
 if(!(my_screen=create_screen("<> SimpleProp <>")))\
      exit(FALSE);
/*------------Open  windows----------------------*/
 flags=SMART_REFRESH | WINDOWDEPTH | WINDOWDRAG | \
       WINDOWSIZING;
 g_window=create_window("Gadget Window", flags, \
                       20, 20, &gadget[0]);
 ModifyIDCMP(g_window, GADGETUP | GADGETDOWN | \
             MOUSEMOVE);
 flags=ACTIVATE | SMART_REFRESH | WINDOWCLOSE | \
       REPORTMOUSE | WINDOWDEPTH | WINDOWDRAG | \
       WINDOWSIZING;
 d_window=create_window("Draw Window", flags, 100, \
                       40, NULL);
 ModifyIDCMP(d_window, MOUSEBUTTONS | CLOSEWINDOW | \
             MOUSEMOVE);
/*---obtain RPorts, and ViewPort for d_window-----*/
 d_rast=d_window->RPort;
 d_v_port=ViewPortAddress(d_window);
 g_rast=g_window->RPort;
/*------set drawing pens---------------------*/
 SetRGB4(d_v_port, 3, 0, 0, 0);  /* black */
 SetAPen(d_rast, 3);
 SetAPen(g_rast, 1);
/*-------set up IDCMP read loop-----------------*/
 FOREVER
   {
    Wait( (1<<d_window->UserPort->mp_SigBit) | \
          (1<<g_window->UserPort->mp_SigBit) );
        handle_messages();
   }
}         /* end of main() */
/*------opens Intuition and graphics-------------*/
VOID open_all()
```

```
{
 IntuitionBase=(struct IntuitionBase *)OpenLibrary\
    ("intuition.library", INTUITION_REV);
 if (IntuitionBase==NULL) exit(FALSE);
 GfxBase=(struct GfxBase *)OpenLibrary\
    ("graphics.library", GRAPHICS_REV);
 if (GfxBase==NULL) exit(FALSE);
}
/*-closes windows, screen, graphics, Intuition--*/
VOID damp_mop()
{
 if (g_window)       CloseWindow(g_window);
 if (d_window)       CloseWindow(d_window);
 if (my_screen)      CloseScreen(my_screen);
 if (GfxBase)        CloseLibrary(GfxBase);
 if (IntuitionBase) CloseLibrary(IntuitionBase);
 exit(FALSE);
}
/*---set up a simple horizontal slide pot-----*/
VOID create_prop(id)
int  id;
{
 struct PropInfo *p=&prop[id];
 p->Flags=AUTOKNOB | FREEHORIZ;
 p->HorizPot=0;
 p->VertPot=0;
 p->HorizBody=0xffff/0x20;
  /* knob is 1/32 of container */
 p->VertBody=0;
}
/*----------receive id and string----------*/
VOID create_itxt(id, string)
int    id;
UBYTE  *string;
{
 struct IntuiText *t=&itxt[id];
 t->FrontPen=1;
 t->BackPen=NULL;
 t->DrawMode=JAM1;
 t->LeftEdge=-20;     /* place to right of gadget */
 t->TopEdge=1;
 t->ITextFont=NULL;
 t->IText=string;
 t->NextText=NULL;
}
/*---------uses 48 x 6 x 1 blocks-------*/
VOID create_image(id, data)
int     id;
USHORT  *data;
{
 struct Image *i=&image[id];
 i->LeftEdge=0;
 i->TopEdge=0;
 i->Width=48;
 i->Height=6;
 i->Depth=1;
 i->ImageData=data;
 i->PlanePick=0x1;
 i->PlaneOnOff=0x0;
 i->NextImage=NULL;
}
/*-set size of gadget to 250 x 10, it's prop type-*/
VOID create_gadget(id, left, top)
USHORT  id;
SHORT   left, top;
{
 struct Gadget *g=&gadget[id];
 g->NextGadget=&gadget[id+1];   /* make sure that */
 g->LeftEdge=left; /* you NULL last one in list */
 g->TopEdge=top;
 g->Width=250;
 g->Height=10;
 g->Flags=GADGHCOMP;
 g->Activation=GADGIMMEDIATE | RELVERIFY | \
              FOLLOWMOUSE;
 g->GadgetType=PROPGADGET;
 g->GadgetRender=(APTR)&image[id];
 g->SelectRender=NULL;
```

Listing continued on p. 92

from p. 91

```
 g->GadgetText=&itxt[id];
 g->MutualExclude=NULL;
 g->SpecialInfo=(APTR)&prop[id];
 g->GadgetID=id;
 g->UserData=NULL;
}
/*--receive gadget list, start location, etc.--*/
struct Window *  create_window(name, flags, \
                            x, y, gadget)
SHORT          x,y;
UBYTE          *name;
ULONG          flags;
struct Gadget *gadget;
{
 struct NewWindow w;
 w.LeftEdge=x;
 w.TopEdge=y;
 w.Width=500;
 w.Height=150;
 w.DetailPen=-1;
 w.BlockPen=-1;
 w.Title=name;
 w.Flags=flags;
 w.IDCMPFlags=NULL;   /* set after open via  */
 w.Type=CUSTOMSCREEN;  /* ModifyIDCMP() */
 w.FirstGadget=gadget;
 w.CheckMark=NULL;
 w.Screen=my_screen;
 w.BitMap=NULL;
 w.MinWidth=250;
 w.MinHeight=50;
 w.MaxWidth=640;
 w.MaxHeight=200;  /* 400 for interlaced display */
 return(OpenWindow(&w));
}
/*---2 deep, hires, non-interlaced-----------*/
struct Screen *  create_screen(name)
UBYTE *name;
{
 struct NewScreen s;
 s.LeftEdge=0;
 s.TopEdge=0;
 s.Width=640;
 s.Height=200;   /* 400 for interlaced display */
 s.Depth=2;
 s.DetailPen=0;
 s.BlockPen=1;
 s.ViewModes=HIRES; /* add | INTERLACE for 400 */
 s.Type=CUSTOMSCREEN;
 s.Font=NULL;
 s.DefaultTitle=name;
 s.Gadgets=NULL;
 s.CustomBitMap=NULL;
 return(OpenScreen(&s));
}
/*-branch to a required window IDCMP routine--*/
VOID handle_messages()
{
    while( message=(struct IntuiMessage *) \
             GetMsg(d_window->UserPort) )
         handle_d_window();
/* set up to respond to net mouse move instead
of each individual move via mouse_moved flag */
    mouse_moved=FALSE;
    while( message=(struct IntuiMessage *) \
             GetMsg(g_window->UserPort) )
         handle_g_window();
    if(mouse_moved) update_prop(gadg_id);
}
/*-------do IDCMP for draw window--------*/
VOID handle_d_window()
{
  ULONG   mclass=message->Class;
  USHORT  mcode=message->Code;
  SHORT   mmx=message->MouseX, mmy=message->MouseY;
  static SHORT  priorx, priory;
  static int    draw_ok;
  ReplyMsg(message);
```

Listing continued on p. 95

The Pull-Down Menu

The Pull-Down Menu

from p. 92

```
  switch(mclass)
      {
        case CLOSEWINDOW:      /* stop program */
           damp_mop();
           break;
        case MOUSEBUTTONS:     /* is it ok to draw? */
                 /* (boy, is this over simplified!) */
           switch(mcode)
              {
                case SELECTDOWN:
                   draw_ok=TRUE;
                   break;
                case SELECTUP:
                   draw_ok=FALSE;
                   break;
              }
           break;
        case MOUSEMOVE:    /* if it's ok, draw from */
                        /* prior location to present */
           if(draw_ok)
             {
              Move(d_rast, priorx, priory);
              Draw(d_rast, mmx, mmy);
             }
           priorx=mmx;
           priory=mmy;
           break;
      }
}
/*------do IDCMP for the gadget window------------*/
VOID handle_g_window()
{
  ULONG     mclass=message->Class;
  APTR      maddress=message->IAddress;
  ReplyMsg(message);
  switch(mclass)
      {
       case GADGETDOWN:
       case GADGETUP:
        gadg_id=((struct Gadget *)maddress)->GadgetID;
        update_prop(gadg_id);
        break;
       case MOUSEMOVE:
          mouse_moved=TRUE;
          break;
      }
}
/* get the value for the slider and alter color 3 */
VOID update_prop(id)
int id;
{
  LONG           num;
  char           text_buf[21];
  static USHORT  red, green, blue;
  num=((struct PropInfo *)gadget[id].SpecialInfo)\
        ->HorizPot;
  num=(15*num)/0xffff;
  switch(id)
      {
        case 0:
           red=num;
           break;
        case 1:
           green=num;
           break;
        case 2:
           blue=num;
           break;
      }
  SetRGB4(d_v_port, 3, red, green, blue);
/* writes the gadget number, R, G, and B values
in the upper left corner of the gadget window */
  sprintf(text_buf, "%2d %3d %3d %3d", id, red, \
           green, blue);
  Move(g_rast, 10, 20);
  Text(g_rast, text_buf, strlen(text_buf));
}
/**THAT'S IT **/
```

■

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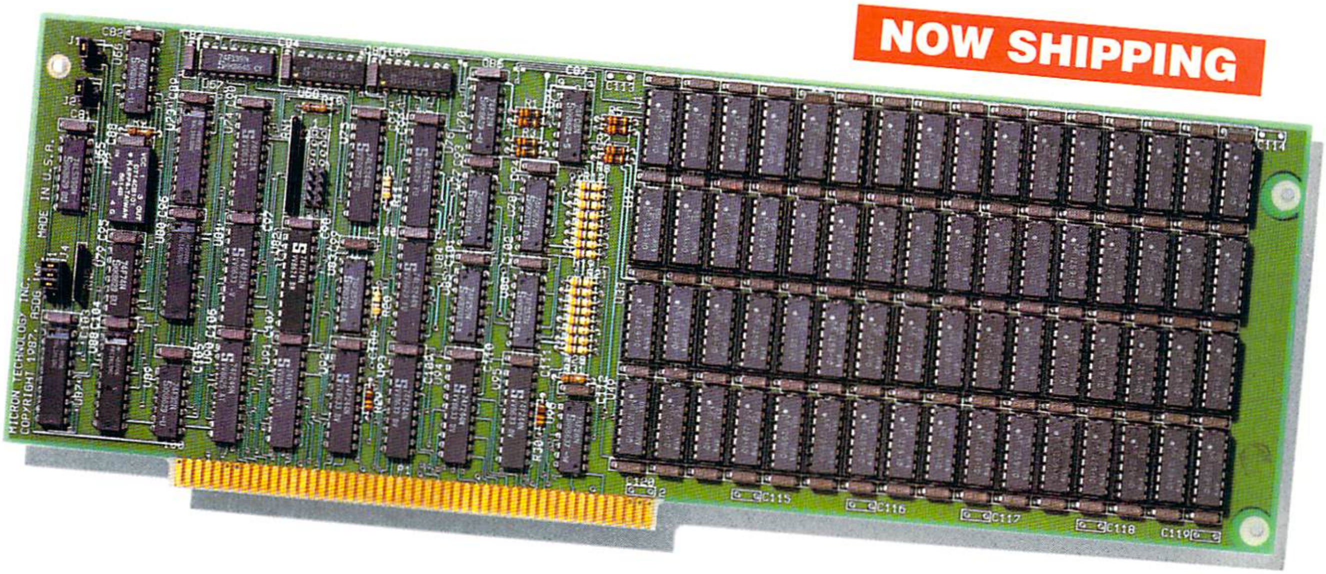
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